

**OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION**

MEMORANDUM

February 19, 2009

TO: Phillip Fielder, P.E., Permits and Engineering Group Manager

THROUGH: Kendal Stegmann, Senior Environmental Manager

THROUGH: Phil Martin, P.E., Engineering Section

THROUGH: Peer Review, Herb Neumann, ROAT

THROUGH: Peer Review, Hal Wright, ROAT

FROM: David Pollard, ROAT

SUBJECT: Evaluation of Permit Application No. **2008-100-C (PSD)**
Pryor Plant Chemical Company
Pryor Mid-America Industrial Park (Lat. 36.237°; Long. -95.271°)
Directions: From Highways 412 and 412B, go approximately 5 miles
north on 412B to main plant entrance.

SECTION I. INTRODUCTION

Pryor Plant Chemical Company (PPCC) submitted an application dated March 27, 2008 to Air Quality Division (AQD) with the required fee of \$2,000 for a construction permit to place into operation a synthetic fertilizer manufacturing plant (SIC 2873) that has been shut down for approximately ten years. Rather than attempt to reconcile existing permits with changes that may result from re-starting a plant that has been inactive for ten years to evaluate where significant modifications are occurring, a decision to simplify the permitting process was made by the applicant and accepted by AQD. A full PSD (prevention of significant deterioration) analysis has been completed for this permit issuance. In addition, evaluation of Compliance Assurance Monitoring (CAM) is required.

The facility was last operated by Wil-Gro Fertilizer, Inc. under Permit No. 95-133-C (M-2), issued on May 6, 1997. Based on information submitted in the current application, the facility appears to have been in operation since 1966 and has a list of permits in the AQD TEAM data base dating back to an issuance date of June 15, 1976. More recently, Permit No. 95-133-C, involved the addition of a 400 TPD nitric acid plant, a 450 TPD urea plant, a 770 TPD ammonia plant, and installation of an 80 MMBTUH back-up boiler. To offset emissions increases from equipment constructed under Permit No. 95-133-C, Permit No. 95-133-C (M-1) was issued for the installation of a catalytic NO_x scrubber on Nitric Acid Plant #4, removal of a 70 TPD urea plant and one of three existing ammonia plants, reduction of fugitive ammonia emissions from other facility operations, and installation of rupture disks on relief valves in ammonia service.

Permit No. 95-133-C (M-2) updated testing requirements and plant process expansions. The nitric acid plant was constructed in Illinois in 1964 and relocated to the Wil-Gro facility in 1995. This is "Nitric Acid Plant #4" referenced in the application. The urea plant was constructed in California in 1965 and relocated to the Wil-Gro facility in 1995. This is "Urea Plant #2" referenced in the application. The discussion in "Section II, Equipment" lists the equipment and the construction dates as submitted relative to Permit No. 95-133-C (M-2). Application for an initial Title V operating permit was withdrawn on June 19, 2000 by the AQD after no response was received to a notice of deficiency.

Although the capacities for the Wil-Gro expansion were additional capacities, not total plant-wide capacities, the activities and operational capacities requested by Pryor Plant Chemical Company substantially parallel those authorized for Wil-Gro in their last three permits [95-133-C, (M-1), & (M-2)]. It appears that the expansion work permitted under Permit No. 95-133-C (M-2) was complete at the time the facility was shut down, because the new applicant is requesting production capacity at similar levels to those permitted in Permit No. 95-133-C (M-2) and plans to do only repairs necessary to place the facility back into operation. PPCC is requesting total production capacities of 700 tons per day (TPD) ammonia, 700 TPD nitric acid, 1,140 TPD ammonium nitrate, and 450 TPD urea for the revived plant processes. Plantwide capacity is greater than the specific process related capacities requested in the application for this permit due to some equipment being out of service. Out-of-service equipment is listed later in the equipment section of this memorandum.

Requested production Capacities

700 TPD ammonia
700 TPD nitric acid
1,140 TPD ammonium nitrate
450 TPD urea

Previously Permitted Limits

770 TPD ammonia
400 TPD nitric acid
Not limited in previous permit
450 TPD urea

New equipment installations will be limited to selective catalytic reduction (SCR) for Nitric Acid Plant #4. Because a full PSD evaluation is being required to place the facility back into operation, it will not be necessary to address issues of modification, reconstruction, or netting of emissions. Therefore, other than for informational purposes, this evaluation does not attempt to sort out existing activities from new activities.

The applicant will be in the process of performing inspections and minor repairs on equipment as necessary to ensure that equipment will be operational and to prevent safety hazards and excess emissions from occurring upon startup. No pollutant-emitting activities are planned and no pollutant-emitting equipment modifications, construction, or reconstruction are planned prior to the facility obtaining the permit.

SECTION II. EQUIPMENT

The facility consists of a complex network of process vessels, dryers, and piping. The following table categorizes the processes at the facility by emission unit group (EUG) and emission point identification.

EMISSION UNITS			
EU/EUG ID	Point ID	EU Name/Model	Construction Date
EUG 1		Ammonia Plant #4	
1	101	225 MMBTUH Ammonia Plant #4 Primary Reformer	1995
1	102	Ammonia Plant #4 Condensate Steam Flash Drum	1995
EUG 2		Urea Plant #2	
2	201	Urea Plant #2	1995 ¹
EUG 3		Nitric Acid Plants	
3	301	Nitric Acid Plant #1 - Fumeabator Unit	1966
3	302	Nitric Acid Plant #3 - Fumeabator Unit	1966
3	303	Nitric Acid Plant #4 - SCR Unit	2008 ²
EUG 4		Nitric Acid Preheaters	
4	401	20 MMBTUH Nitric Acid Preheater #1	1966
4	402	20 MMBTUH Nitric Acid Preheater #3	1966
4	403	20 MMBTUH Nitric Acid Preheater #4	1964
EUG 5		Carbon Dioxide Vent	
5	501	Carbon Dioxide Vent	1966
EUG 6		Ammonium Nitrate Plants	
6	601	Ammonium Nitrate Plant #1 Neutralizer Vent	1966 ³
6	602	Ammonium Nitrate Plant #2 Run Down Tank Vent	1995 ³
EUG 7		Granulator Scrubbers	
7	701	Granulator Scrubber #1	1975
7	702	Granulator Scrubber #2	1975
7	703	Granulator Scrubber #3	1975
EUG 8		Boilers	
8	801	80 MMBTUH Boiler #1	1978
8	802	80 MMBTUH Boiler #2	1995
EUG 9		Cooling Towers	
9	901	Cooling Tower #1	1966
9	902	Cooling Tower #2	1995
EUG 10	NA	Fugitives	Various
NA	NA	Insignificant Emissions Sources	Various
NA	1001	0.0152 MMBTUH Ammonia Storage Flare Pilot	1996
NA	NA	Storage Tanks	Various

NA - Not Applicable.

- 1 Urea Plant #2 was originally constructed in California in 1965 and relocated to the Pryor Plant Chemical Company in 1995.
- 2 Nitric Acid Plant #4 was originally constructed in Illinois in 1964 and relocated to the Pryor Plant Chemical Company in 1995. The SCR will be new construction added during 2008-2009.
- 3 The ammonium nitrate plants will be designed to be closed systems, i.e., only fugitive emissions are expected.

SECTION III. PROCESS DESCRIPTION

Pryor Plant Chemical Company (Pryor) is proposing to begin operation of an integrated inorganic fertilizer plant located at the Mid-America Industrial District in Pryor, Oklahoma. The facility consists of several production plants as described below.

EUG No. 1 - Ammonia Plant #4

Pryor will operate one ammonia plant at this facility (Ammonia Plant #4) with a maximum capacity of 700 tons of ammonia per day, or 255,500 tons per year. The plant is equipped with a gas-fired primary reformer with a maximum heat input capacity of 225 MMBtu/hr. The reformer will be fired on a combination of pipeline quality natural gas and plant offgas routed from the carbon regeneration process. The plant produces ammonia by reacting hydrogen with nitrogen over a catalyst at high temperature and pressure to form ammonia (NH₃). Nitrogen is obtained from ambient air, while hydrogen is obtained from the catalytic steam reforming of methane. The process uses about 21,250 standard cubic feet of natural gas per ton of ammonia produced. There are six steps required to produce ammonia using the catalytic steam reforming method:

- . Natural gas desulfurization
- . Catalytic steam reforming
- . Carbon monoxide shift
- . Carbon dioxide removal
- . Methanation
- . Ammonia synthesis ($3\text{H}_2 + \text{N}_2 \rightarrow 2\text{NH}_3$)

Natural Gas Desulfurization

Sulfur is a poison to many catalysts used in the ammonia synthesis process. In this step of the ammonia synthesis process, the sulfur contained in the natural gas feedstock is removed with activated carbon.

Catalytic Steam Reforming

After desulfurization, the natural gas feed is mixed with the steam and the mixture is sent to the primary reformer. This process utilizes indirect heating fired on natural gas. In the reforming process, approximately 56% of the methane contained in the natural gas feed is converted to hydrogen and carbon dioxide. The resulting gas mixture is then sent to a secondary reformer, where it is mixed with compressed air to form a final "synthesis gas" that has the desired hydrogen to nitrogen molar ratio. This is an exothermic reaction that does not need an external source of heat. The synthesis gas leaving the reformer is cooled, and the heat recovered, in the Feed Gas Preheater.

Carbon Monoxide Shift

Carbon monoxide is formed as a byproduct in the catalytic steam reforming process. After cooling, the carbon monoxide and water contained in the synthesis gas are converted to carbon dioxide and hydrogen in the High Temperature Shift Converter. Un-reacted steam is condensed and separated from the synthesis gas in a knockout drum, and the condensate is flashed in Ammonia Plant #4 Condensate Steam Flash Drum (EU ID 102) at a rate of approximately 1,040

lbs/hr to remove volatile gases. The residual condensate is returned to the boiler or may be temporarily held in the de-aerator until ready for use as feed water to the boiler.

Carbon Dioxide Removal

After the carbon monoxide shift, the carbon dioxide is removed from the process gas by sending the synthesis gas through an absorption tower. There, the carbon dioxide is stripped out of the gas using methyl diethanolamine (MDEA). Carbon dioxide is removed from the MDEA in a stripper column, where it is then routed as needed to the Carbon Dioxide Plant and the Urea Plant, and excess amounts are vented.

Methanation

The synthesis gas leaving the carbon dioxide absorber consists primarily of uncombined hydrogen and nitrogen, with residual amounts of carbon dioxide and carbon monoxide. Carbon dioxide and carbon monoxide are poisons to ammonia synthesis catalysts and must be removed. This is accomplished by passing the heated process gas over a catalyst, where the carbon dioxide and carbon monoxide are converted to methane.

Ammonia Synthesis

In this final step, the hydrogen and nitrogen-rich synthesis gas is converted to ammonia. The process is not 100% efficient, and some of the unconverted synthesis gas leaving this step in the process is mixed with incoming raw synthesis gas and recycled back through the process.

Synthesis gas from the methanation process is compressed, mixed with recycled synthesis gas, and then cooled. Any ammonia in the synthesis gas, which has condensed at this point in the process, is separated from the unconverted synthesis gas and sent to the separator. The unconverted synthesis gas is compressed, preheated, and then contacted with an iron oxide catalyst in the synthesis converter. Ammonia in the gas leaving the converter is condensed, and the ammonia is sent to a separator. Ammonia sent to the separator is flashed to remove impurities. The ammonia rich flashed vapor is then condensed in a chiller, where anhydrous ammonia is removed and stored as a liquid at low temperature.

EUG No. 2 - Urea Plant

Pryor will operate one urea production plant with a maximum production capacity of 400 tons of urea per day, or 146,000 tons per year. Urea ($\text{CO}(\text{NH}_2)_2$) is produced by combining ammonia (NH_3) with carbon dioxide (CO_2). The ammonia and carbon dioxide used in this process are produced on-site.

In the first step in the urea manufacturing process, ammonia and carbon dioxide are combined to form ammonium carbamate ($\text{NH}_2\text{CO}_2\text{NH}_4$). The ammonium carbamate is then partially dehydrated to form an aqueous urea solution. All of the urea produced by the facility is mixed with ammonium nitrate in the Urea-Ammonium Nitrate Solution Plant to form urea-ammonium nitrate (UAN) solution. The UAN solution is stored on-site temporarily prior to being shipped off-site. This portion of the process is a closed system; therefore, there are no emissions released to the atmosphere. Additionally, no urea granulation occurs at this facility.

EUG No. 3 - Nitric Acid Plants

Pryor is planning to operate three nitric acid plants at the facility. Nitric Acid Plant #1 will produce a maximum of 200 tons of 100% nitric acid per day, or 73,000 tons per year; Nitric Acid Plant #3 will produce a maximum of 150 tons of 100% nitric acid per day, or 54,750 tons per year; and Nitric Acid Plant #4 will produce a maximum of 350 tons of 100% nitric acid per day, or 127,750 tons per year. Nitric acid (HNO_3) will be produced in three steps:

- Ammonia oxidation
- Condensation
- Absorption

Ammonia Oxidation

In this process, ammonia is first mixed with ambient air, heated, and passed over a cobalt catalyst, where the ammonia is oxidized to nitric oxide.

Condensation

The nitric acid rich gas stream is first cooled in a waste heat recovery boiler and then further cooled in a cooler/condenser. Under these conditions, the nitric oxide formed during the ammonia oxidation step is further oxidized to nitrogen dioxide and nitrogen tetroxide.

Absorption

The nitrogen dioxide and nitrogen tetroxide mixture from the condensation step is sent to the bottom of an absorption tower, where it flows countercurrent to water introduced at the top of the tower. Nitric acid is formed by contact of the nitrogen dioxide and tetroxide with a water scrubber and is removed at the bottom of the absorption tower.

EUG No. 4 - Nitric Acid Plant Preheaters

The Nitric Acid Plant Preheaters are used to preheat the process air from 300 °F to 500 °F for startup purposes. The process air flows through tubes inside the preheater, which are heated by a natural gas fired burner. The preheaters are used for startup purposes only. As implied by the EUG name, these emissions units have only combustion related emissions.

EUG No. 5 – Carbon Dioxide Vent

Excess carbon dioxide from the processes is vented through the Carbon Dioxide Vent. Refer to sections describing the Carbon Monoxide Shift, Carbon Dioxide Removal, and Carbon Dioxide Regenerator processes. Carbon dioxide is not a regulated pollutant at this time, but the waste CO_2 contains trace amounts of carbon monoxide.

EUG No. 6 - Ammonium Nitrate Plants

Pryor will operate two ammonium nitrate plants at the facility. The ammonium nitrate plants have a maximum total combined production capacity of 1,140 tons of ammonium nitrate per day (570 tons per day or 208,050 tons per year each). Ammonium nitrate (NH_4NO_3) is produced by

the neutralization of nitric acid with ammonia. Both the ammonia and the nitric acid are produced on-site. The resulting aqueous ammonium nitrate solution is either concentrated by evaporation and sent to the granulator to be processed into granules, or mixed with urea to form urea ammonium nitrate solution.

Ammonium Nitrate Plant #1 and Ammonium Nitrate Plant #2

Ammonia vapors and 56% Nitric Acid liquid are mixed in a neutralizer (tank) at atmospheric pressure. This process is exothermic, and therefore makes steam at atmospheric pressure due to boiling the water out of the nitric acid. As the level in the neutralizer comes up, it reaches an overflow line that sends the 83% ammonium nitrate solution to the rundown tank still at atmospheric pressure. At this point, the ammonium nitrate solution is approximately 280 deg F. Steam that is produced in the neutralizer and the rundown tank is utilized to heat the nitric acid and vaporize ammonia. Steam that is not condensed as a result of this heat transfer is subsequently condensed in a water cooled condenser.

EUG No. 7 - Granulator Scrubbers

Granulated ammonium nitrate can be produced using the Pan Granulator or the Prill Tower. Ammonium nitrate granules are produced at the Pan Granulator by spraying concentrated ammonium nitrate solution onto a heated, rotating circular pan. Layers of ammonium nitrate are added to the pan as the water evaporates, eventually forming granules. The granules are then cooled, screened to obtain consistent granule sizes, and then stored temporarily prior to being shipped offsite. There are three separate scrubbers serving the Granulator Plant and the Prill Tower. They perform the same function of scrubbing ammonium nitrate dust particles from separate air flows on three different portions of the Granulator Plant. When the Pan Granulator is running, all three of the scrubbers are in service. When the Prill Tower is running, Granulator Scrubber #1 is the only one in service. The liquid sumps of the three scrubbers each contain a weak ammonium nitrate solution and are connected to make one single liquid circulation. Granulator Scrubber #1 receives condensate from the ammonia nitrate condensate tank, and the liquid concentrates up to a maximum of 3% as a result of control of ammonium nitrate PM. The scrubber liquid then gravity feeds to Granulator Scrubber #2, where it concentrates up to a maximum of 17%. The liquid is then pumped to Granulator Scrubber #3, where it concentrates up to a maximum of 60%. Finally, the scrubber liquid is pumped back into the ammonium nitrate product solution and reused. Following are additional details concerning each scrubber.

Granulator Scrubber #1: A cyclone blower pulls air across a set of chiller coils and through the product cooler counter current to the flow of ammonium nitrate granules flowing through the cooler. This process cools the nitrate down by a temperature difference of approximately 70 degrees Fahrenheit (°F) from the inlet of the cooler to the exit of the cooler. A small amount of ammonium nitrate particulate is pulled out of the cooler and into the top of the cyclones, where it is forced to the outside of the cyclones by centrifugal force created by the cyclonic action of the forced air. The particles are washed down into the sump (wet system tank) by two nozzles spraying a weak ammonium nitrate solution (1% - 3%) through the cyclones. The air exits the system via the blower discharge stack. The weak ammonium nitrate solution level in the Granulator Scrubber #1 sump runs into an overflow line that feeds Granulator Scrubber #2

Scrubber to maintain the working level in it. The concentration of the ammonium nitrate solution in Granulator Scrubber #1 is controlled by how much condensate is added from the condensate tank in the Ammonium Nitrate Solution Plant, and as noted, is maintained at approximately 1% to 3%. The two nozzles at the top of the cyclone are checked once per shift and are changed out if necessary. The wet system tank is washed out approximately once per month during shutdown for maintenance repairs.

Granulator Scrubber #2 (the Grey Scrubber), on the Pan Granulator only, pulls emissions from two discharges. The scrubber pulls steam and small ammonium nitrate particles off the top of the evaporator and ammonium nitrate dust out of the pan disc. These two streams combine to flow past four nozzles spraying ammonium nitrate solution (13% - 17%) supplied by a recycle pump. The combined stream flows through a venturi, where the liquid ammonium nitrate solution is separated from the gas. The particle-laden liquid collects in the sump (collection tank), and the gas is discharged to the atmosphere. The sump liquid level is automatically controlled to pump excess liquid to Granulator Scrubber #3. The concentration of the liquid in Granulator Scrubber #2 is determined by how much liquid it receives from Granulator Scrubber #1, but the concentration is usually 13% to 17% (with occasional variances outside that range). This system requires very little maintenance; however, the man-way is opened annually, and the inside of the scrubber is inspected. Past maintenance required that the nozzles be replaced one to two times per year. The collection tank is washed out about once per month when the unit is shut down for maintenance repairs.

Granulator Scrubber #3: A blower pulls air across a set of chiller coils and through the pre-cooler countercurrent to the flow of ammonium nitrate granules also flowing through the pre-cooler. This cools the ammonium nitrate by a temperature drop of approximately 50 °F from the inlet of the cooler to the exit of the cooler. Ammonium nitrate fines and dust are pulled out of the pre-cooler and into the north vessel of the scrubber, where the emissions-laden air comes into contact with the ammonium nitrate solution having (approximately 60% by concentration) that is being sprayed through four nozzles. The air flows from the north vessel of the scrubber to the south vessel and through four sets of hog hair filters that are sprayed with ammonium nitrate solution to keep the recovered fines washed to the scrubber sump. The concentration of the solution is held at 58% to 60%. At 65% concentration, the solution has a tendency to precipitate out on the filters, thereby plugging them and causing damage. The discharge air then passes through a set of baffles and then through a demister pad designed to remove entrained liquid and mist before it is discharged to the atmosphere. The level of the scrubber sump is monitored manually through a sight glass, and excess liquid is recycled back to the ammonium nitrate granulator. Scrubber #3 is inspected, cleaned out, and filters and nozzles are replaced as needed whenever the granulator is shut down for maintenance. Maintenance activities are performed approximately once per month.

EUG No. 8 - Steam Generation Boilers

PPCC will operate two natural gas fired boilers at this facility. Each boiler has a maximum heat input rate of 80 MMBtu/hr. The boilers will provide the steam needed to operate the various pieces of equipment at the facility.

Out of Service Equipment

Ammonia Plant #1 (Reformer, Desulfurization, etc.)

Ammonia Plant #2 (Reformer, Desulfurization, etc.)

Ammonia Plant #3 (Reformer, Desulfurization, etc.)

Urea Plant #1

Nitric Acid Plant #2

SECTION IV. EMISSIONS

Emissions are calculated based on the anticipated maximum production rates. Permit limits are based on these calculations and are justified through PSD analysis, including BACT analysis and modeling to document compliance with the NAAQS. The applicant has stated that the facility is able to comply at all times. Although the types of processes generating emissions at this facility are not expected to result in significant excess emissions during periods of startup and shutdown, the permittee will take preventive measures to avoid excess emissions that could otherwise occur during startup, shutdown, blowdown, maintenance, or other such activities resulting in excess emissions that can be reasonably predicted.

EUG No. 1 - Ammonia Plant #4

The maximum ammonia production capacity of Ammonia Plant #4 is 700 tons per day, and the requested permitted throughput rate is 700 tons per day. Therefore, Ammonia Plant #4 will be operating at full capacity. Emissions generated at the ammonia plant primarily include emissions of combustion from the Primary Reformer (EU ID 101) and emissions of volatile organic compounds (VOC) generated from the Condensate Steam Flash Drum (EU ID 102).

Primary Reformer

The maximum heat input rating of the reformer is 225 MMBtu/hour. Operating 8,760 hours annually equates to a fuel demand of 1,971,000 MMBtu/year. Except for emissions of SO₂, calculations for combustion emissions are based on AP-42 emission factors and the fuel demand of 1,971,000 MMBtu/year, which equates to a natural gas fuel input of 1,932.4 MMscf/year based on a gross calorific value of 1,020 Btu/scf and annual operating hours of 8,760. Actual emissions are the same as potential to emit (PTE). SO₂ emissions result from the combustion of a mixture of two fuel sources, namely pipeline natural gas and waste gas from the desulfurization unit. Because the amount of waste gas depends on ammonia production and has little effect on the overall heating value of the gas mixture even at peak ammonia production, emissions from the fuel sources are considered separately. The ammonia process uses approximately 21,250 standard cubic feet of natural gas per ton of ammonia produced. For an ammonia production rate of 700 TPD, this equates to 5,429 MMscf/yr. Second, the AP-42 emissions factor is based on a sulfur content of 0.002 grains/scf, whereas the gas supplier has indicated that sulfur could be as high as 0.003 grains/scf. However, because the permit will limit incoming fuel gas to a sulfur content of 0.5 grains/100 scf (0.005 grains/scf), an adjustment to the emission factor for the reformer was made using the ratio of the permit limit (0.005 grains/scf) to the value used in the AP-42 emission factor,

resulting in an emissions factor of 1.5 lbs/MMscf (2.5 x 0.6). The following tables summarize the results of the calculations.

Pollutant	Emission Factor		Source of Emission factor	Emissions	
	Value	Units		Max. (lb/hr)	Annual (ton/yr)
CO	84.0	lbs/MMscf	AP-42; Table 1.4-1	18.53	81.16
NO _x	0.053	lbs/MMBtu	Manufacturer Guarantee	11.93	52.23
PM	7.6	lbs/MMscf	AP-42; Table 1.4-2	1.68	7.34
PM ₁₀	5.7	lbs/MMscf	AP-42; Table 1.4-2	1.26	5.51
SO ₂ primary fuel	1.5	lbs/MMscf	AP-42; Table 1.4-2	0.33	1.45
SO ₂ waste gas	1.5	lbs/MMscf	AP-42; Table 1.4-2	1.02	4.48
VOC	5.5	lbs/MMscf	AP-42; Table 1.4-2	1.21	5.31
Formaldehyde	0.075	lbs/MMscf	AP-42; Table 1.4-3	0.02	0.07

Condensate Steam Flash Drum

Emissions of VOC and NH₃ from the condensate flash drum were taken from the memorandum for Permit No. 95-133-C (M-2). Calculations of emissions are based on mass balance using known concentrations of the subject pollutants from past operations for ammonia when production rates were near 29.2 tons per hour, the condensate throughput rate, and continuous operation (8,760 hours per year). Actual emissions are the same as PTE. For VOC, it is assumed that all volatile organic compounds evaporate from the condensate. For ammonia, inlet and outlet concentrations of 340 ppmw and 330 ppmw from past operations indicate that 10 ppmw is lost as emissions to the atmosphere. It is assumed based on past operations that the condensate liquid density is near that of water (8.34 lbs/gal). Condensate throughput was then converted from hourly and annual volumetric rates to mass rates, as indicated in the following table.

Pollutant	Emissions Factor	Condensate Throughput	Emissions	
	ppmw	lb/hr	lb/hr	ton/yr
VOC	115	80,064	9.21	40.33
NH ₃	10	80,064	0.80	3.51

As a comparison, AQD calculated emissions of VOC and NH₃ using AP-42, Table 8.1-1 emission factors of 1.2 lbs/ton for VOC and 2.2 lbs/ton for NH₃, yielding 153.5 TPY VOC and 281.4 TPY NH₃. Footnote “g” to Table 8.1-1 states that this is “Mostly methanol, which is classified as Non-Methane Organic Compound and a hazardous air pollutant”, but the validity of this assumption and the accuracy of the VOC emissions factor itself are questionable. The applicant has offered the following calculations based on an analysis for total organic carbon (TOC) performed on the condensate from the condensate steam flash drum (EU ID 102) on October 15, 1999 using Method 5310C, listed in “Standard Methods for the Examination of Water & Wastewater”, 20th Edition (1998), for TOC analysis for the reclamation and recycling of municipal wastewater. Note that although the results illustrate a discrepancy in that the outlet concentration was measured to be lower than the inlet concentration, the permit requires performance testing to verify actual emissions rates and development of parametric monitoring using parameters such as temperature, pressure, and throughput to ensure that the source remains below the HAP major source threshold of 10 tons per year.

From the October 6, 1999 sampling event:

TOC Concentration in Inlet to Flash Drum	28 ppm TOC
TOC Concentration in Exit from Flash Drum	32 ppm TOC

PPCC states that knowledge of process indicates that the temperature of the saturated condensate stream entering the condensate steam flash drum is too low to promote significant volatilization of methanol. PPCC contends that previous testing supports this finding, as the sample results listed above do not indicate a release of TOC; therefore, there is no release of methanol across the flash drum. Regardless, for the purpose of establishing permit limits and to demonstrate potential emissions, TOC emissions are proposed using the worse-case assumption that 50% of the available TOC is released as methanol.

Converting TOC to methanol (CH₃OH):

Molecular weight of CH ₃ OH	=	32
Molecular weight of TOC (as carbon)	=	12

$(32/12) \times 32 \text{ ppm TOC} = 85.33 \text{ ppm methanol}$

Calculating emissions in lb/hr, based on mass balance:

Assuming condensate flow = 9,600 gal/hr and density = 8.34 lb/gal

Then total mass flow = 80,064 lb/hr

and:

Methanol emitted = $80,064 \text{ lb/hr} \times 85.33/1,000,000 \times 50\% = 3.42 \text{ lb/hr}$

Potential to Emit = $3.42 \text{ lb/hr} \times 8,760/2,000 = 15.0 \text{ ton/yr}$

However, PPCC is proposing a permit limit of 9.5 ton/yr methanol to maintain its minor source status for HAPs, thus eliminating MACT requirements. To ensure compliance with this limit, in addition to the initial stack test requirements contained in Specific Condition No. 9, the permittee will develop and implement a plan for monitoring process conditions using parameters such as temperature, pressure, condensate throughput, and periodic measurement of methanol in the condensate. The plan will include action levels that represent operating conditions which cannot be exceeded to ensure compliance with the proposed permit limit, as well as the technical justification for selection of the selected monitoring parameters.

Desulfurization Unit Regeneration

Desulfurization of natural gas used as a raw material in the process is done using carbon adsorption. Regeneration of the carbon will be accomplished by flushing the carbon bed with natural gas heated to temperatures near 350 °F. Off-gases from the Desulfurization Unit Regeneration are routed to the reformer and combined with the natural gas fuel gas.

Carbon Dioxide Regenerator

Off-gases from the Carbon Dioxide Regenerator are routed back to the Carbon Dioxide Plant and the Urea Plant as needed, and excess amounts are vented.

EUG No. 2 – Urea Plant

The Urea Plant has a maximum capacity of 146,000 tons per year. The permitted volume will be 146,000 tons per year. All off-gases are recycled back into the process.

EUG No. 3 – Nitric Acid Plants

The maximum total combined production capacity of Nitric Acid Plants #1 (200 tons per day), #3 (150 tons per day), and #4 (350 tons per day) is 700 tons per day, and the requested permitted throughput is 700 tons per day. Therefore, the nitric acid plants will be operating at full capacity. Emissions of NO_x are generated as tail gas from the acid absorption towers from all three plants. NO_x is the end result of a three-step reaction. First, ammonia and air are heated and oxidized using a catalyst to form nitric oxide and water. Second, the nitric oxide reacts with residual oxygen under high pressure to form nitrogen dioxide. Finally, the nitrogen dioxide is sent through an absorption tower, where it reacts with water to form aqueous nitric acid (2HNO₃). Secondary air is introduced into the tower to re-oxidize NO (nitrogen II oxide) that is formed in the absorption process resulting in emissions of air and NO_x (NO₂ and NO). Tail gases exiting the top of the absorption towers on Plant #1 and Plant #3 pass through non-selective catalytic reduction (NSCR) units, referred to as fumeabators, prior to discharge to the atmosphere to control NO_x emissions. These two nitric acid plants utilize extended adsorption design technology to reduce NO_x emissions prior to further treatment in the fumeabators. Tail gas from Nitric Acid Plant #4 will be controlled by a selective catalytic reduction (SCR) control system. Emissions of NO_x and NH₃ slip will be exhausted to the atmosphere from the SCR. This is the new Nitric Acid Plant #4 SCR Unit that is pending construction after issuance of this permit. According to a technical bulletin titled "*Platinum Catalysts And Systems For Pollution Control*, by J. B. Hunter, Matthey Bishop, Inc." included with PPCC's response to AQD's Notice Of Deficiency issued October 2, 2008, the tail gas discharged from nitric acid plants is the main source of emissions from nitric acid plants. As shown in the emissions summary of this permit memorandum, it is the main source of NO_x emissions from this facility. In addition to NO, NO₂, and O₂, tail gas contains trace amounts of acid mist or vapor. According to the referenced bulletin, the total of NO and NO₂ may range from 0.1 to 0.6 percent by volume.

Nitric Acid Plant #1 has a fumeabator manufactured by Engelhard, which uses a platinum/rhodium/palladium catalyst and a Al₂O₃ substrate catalyst pack. The packs are 30" in diameter and 18" deep. Originally, the fumeabator had one pack in it, but in 1994, it was modified to hold two. The fumeabator now has one pack of Engelhard PR3 catalyst and one pack of Engelhard PR5 catalyst. Methane (natural gas) or purge gas is added to the tail gas upstream from the fumeabator. The gas mixture results in an exothermic reaction on the catalyst heating to temperatures around 980 °F near the inlet to the fumeabator and increasing to 1,400 °F near the outlet going into the gas cooler boiler. The gas mixture exits the boiler to the expander at temperatures near 1,100 °F. The gas passes through the expander, and is then exhausted out of

the stack to the atmosphere. Nitric Acid Plant #3 uses a fumeabator manufactured by S & AT Company. It is designed much like the one used in Plant #1 and also employs a two-stage catalyst. However, the catalyst used in the Plant #3 fumeabator is a nickel/platinum/aluminum-oxide material.

Emissions of NO_x from Nitric Acid Plants #1 and #3 are based on an emission factor of 1.6 lbs/ton of nitric acid production considering the extended absorption process and NSCR control technology and are based on emissions testing conducted prior to the facility shutdown mentioned in Section I of this Memorandum. The accuracy of this factor and thus compliance with the emissions limit will be determined by stack testing. As previously noted, tail gas from Nitric Acid Plant #4 is treated in a SCR unit before discharge to the atmosphere. Emissions calculations for Plant #4 are based on the SCR manufacturer's guarantee of 2.5 lbs/ton of nitric acid production. Emissions of NH₃ slip from the SCR result from an incomplete reaction of NH₃ and NO_x. Emissions of NH₃ are based on an emissions factor provided by the SCR manufacturer of 10 ppmv in the exhaust gas. An exhaust rate of 33,000 scfm is assumed by PPCC based on the anticipated air injection rate into the absorption tower. Because all calculations are based on continuous operation (8,760 hours annually), actual emissions are the same as PTE.

Emissions – Nitric Acid Plants #1, #3, #4

NO _x Emissions	NO _x Controlled Emissions Factor (lb/ton)	Control Efficiency (%)	Nitric Acid Produced (ton/hr)	Controlled NO _x Emissions	
				lb/hr	ton/yr
Plant #1 – EU Point 301	1.6	90	8.3	13.3	58.2
Plant #3 – EU Point 302	1.6	90	6.3	10.1	44.2
Plant #4 – EU Point 303	2.5	95	14.6	36.5	159.9
Totals				59.9	262.3

NH ₃ Slip Emissions	NH ₃ Emissions Factor (ppm)	SCR Exhaust Gas (scfm)	Emissions	
			lb/hr	ton/yr
Plant #4 – EU Point 303				
NH ₃	10	33,000	0.9	3.8
Total			0.9	3.8

EUG No. 4 – Nitric Acid Preheaters

Nitric Acid Plants #1, #3, and #4 – Preheaters

The preheaters at each of the three nitric acid plants are identical in heat input rating. Emissions generated from the Nitric Acid Plant Preheaters are primarily emissions of combustion. The maximum heat input rating of each heater is 20 MMBtu/hour. Operating 8,760 hours annually equates to a fuel demand of 175,200 MMBtu/year for each one. Calculations of combustion emissions are based on the emission factors listed in the table below and the fuel demand of 175,200 MMBtu/year, which equates to a natural gas fuel input of 171.76 MMscf/year based on a gross calorific value of 1,020 Btu/scf. Actual emissions are the same as potential to emit (PTE).

The following table summarizes the methodology used to calculate emissions and the results of the calculations for the total combined emissions for the three preheaters.

Pollutant	Emission Factor		Source of Emission factor	Emissions	
	Value	Units		Maximum (lb/hr)	Annual (ton/yr)
CO	84.0	lbs/MMscf	AP-42; Table 1.4-1	4.95	21.63
NO _x	50.0	lbs/MMscf	AP-42; Table 1.4-1	2.94	12.87
PM	7.6	lbs/MMscf	AP-42; Table 1.4-2	0.45	1.95
PM ₁₀	5.7	lbs/MMscf	AP-42; Table 1.4-2	0.33	1.47
SO ₂ *	1.5	lbs/MMscf	AP-42; Table 1.4-2	0.09	0.39
VOC	5.5	lbs/MMscf	AP-42; Table 1.4-2	0.33	1.41

* See discussion above under Primary Reformer emissions for derivation of emission factor.

EUG No. 5 – Carbon Dioxide Vent

Calculations of CO emissions are based on mass balance using a known concentration of the subject pollutant from past operations, the maximum carbon dioxide throughput rate (maximum rate to CO₂ Plant), and continuous operation (8,760 hours per year). Actual emissions are the same as PTE. Note that the carbon dioxide venting considered here only occurs when the CO₂ Plant is shut down.

Pollutant	Emissions Factor	Carbon Dioxide Vented	Carbon Monoxide Emissions	
	lb/ton	ton/hr	lb/hr	ton/yr
CO	0.1	36.5	3.65	15.99

EUG No. 6 - Ammonium Nitrate Plants

Ammonium Nitrate Plant #1 and Plant #2 Neutralizers

Ammonium Nitrate Plant #1 and Plant #2 Neutralizers are identical in throughput capacity. Each plant is rated at an hourly liquid ammonium nitrate production capacity of 23.8 tons per hour and an annual liquid ammonium nitrate production capacity of 208,488 tons per year. Emissions are controlled by in-stack condensers. As noted earlier, steam that is not condensed as a result of this heat transfer is subsequently condensed in a water cooled condenser. To reduce monitoring requirements, PPCC has elected to make the neutralizers a closed process which effectively eliminates point source emissions. However, as a contingency for potential fugitive emissions, PPCC estimates that 1% of the emission-laden steam escapes as opposed to the previously estimated 20%. This results in reduced emissions. Therefore, for this permit, calculations for emissions of ammonia and ammonium nitrate are based on the liquid ammonium nitrate production rate, emission factors used during Wil-Gro's operation of the facility, and continuous operation (8,760 hours per year). Emission factors were developed as illustrated in the table, where 0.3293 is the amount of steam emitted per ton of product and fugitive emissions are estimated at 1% (instead of the previous 20% scrubber efficiency considered prior to PPCC's decision to implement a closed vent process). Concentration values of 0.5%, 0.05%, 1.0%, and 0.05% were used for hourly and annual emissions calculations for ammonia and ammonium

nitrate, respectively. The reason that the hourly concentrations are different from the annual concentrations is because this is a batch process. Emissions of particulate matter are based on AP-42 emission factors. Actual emissions are the same as PTE. The following table summarizes the methodology used to calculate emissions and the results of the calculations for the total combined emissions from the two neutralizers.

Pollutant	Emission Factor	Source of Emission factor	Emissions	
	lbs/ton NH_4NO_3		Max. (lb/hr)	Annual (ton/yr)
Non-PM Emissions				
NH_3 (hourly)	0.03293	$0.3293 \times \text{ton/ton} \times 0.5\% \times 1\% \times 2,000 \text{ lbs/ton}$	1.56	
NH_3 (annual)	0.003293	$0.3293 \times \text{ton/ton} \times 0.05\% \times 1\% \times 2,000 \text{ lbs/ton}$		0.69
PM Emissions				
NH_4NO_3 (hourly)	0.06586	$0.3293 \times \text{ton/ton} \times 1\% \times 1\% \times 2,000 \text{ lbs/ton}$	3.13	
NH_4NO_3 (annual)	0.003292	$0.3293 \times \text{ton/ton} \times 0.05\% \times 1\% \times 2,000 \text{ lbs/ton}$		0.69
PM/PM_{10}	0.2170*	AP-42, Table 8.3-2 $\times 1\%$	0.10	0.45
Total PM			4.13	1.14

* average of range of values

EUG No. 7 - Granulator Scrubbers

Granulator Scrubbers #1, #2, and #3

Granulator Scrubbers #1, #2, and #3 are identical in throughput capacity. Each scrubber is rated to handle emissions from the production of 16.7 tons per hour (146,292 tons per year) of dry ammonium nitrate. Emissions of ammonia and particulate matter are based on AP-42 emission factors and annual operating hours of 8,760. Actual emissions are the same as PTE. The following table summarizes the methodology used to calculate emissions and the results of the calculations for the total combined emissions for the three scrubbers.

Pollutant	Emission Factor	Source of Emission factor	Emissions	
	lbs/ton NH_4NO_3		Maximum (lb/hr)	Annual (ton/yr)
PM	0.04	AP-42, Table 8.3-2, pan granulators	2.1	8.8
PM_{10}	0.04	AP-42, Table 8.3-2, pan granulators	2.1	8.8
NH_3	0.14	AP-42, Table 8.3-2, pan granulators	7.0	30.7

EUG No. 8 - Boilers

Boiler #1 and Boiler #2

Boiler #1 and Boiler #2 are identical in heat input rating. The maximum heat input rating of each boiler is 80.0 MMBtu/hour. Operating 8,760 hours annually equates to a fuel demand of 700,800 MMBtu/year for each boiler. Calculations of combustion emissions are based on the emission factors listed in the table below and the fuel demand of 700,800 MMBtu/year, which equates to a natural gas fuel input of 687.06 MMscf/year based on a gross calorific value of 1,020 Btu/scf and annual operating hours of 8,760. Actual emissions are the same as potential to emit (PTE). The following table summarizes the methodology used to calculate emissions and the results of the calculations for the total combined emissions for the two boilers.

Pollutant	Emission Factor		Source of Emission factor	Emissions	
	Value	Units		Maximum (lb/hr)	Annual (ton/yr)
CO	84.0	lbs/MMscf	AP-42; Table 1.4-1	13.18	57.72
NO _x	50.0	lbs/MMscf	AP-42; Table 1.4-1	7.84	34.36
PM	7.6	lbs/MMscf	AP-42; Table 1.4-2	1.20	5.22
PM ₁₀	5.7	lbs/MMscf	AP-42; Table 1.4-2	0.90	3.92
SO ₂ *	1.5	lbs/MMscf	AP-42; Table 1.4-2	0.25	1.10
VOC	5.5	lbs/MMscf	AP-42; Table 1.4-2	0.86	3.78
Formaldehyde	0.075	lbs/MMscf	AP-42; Table 1.4-3	0.01	0.05

* See discussion above under Primary Reformer emissions for derivation of emission factor.

EUG No. 9 - Cooling Towers

Cooling Tower #1 has a circulation capacity of 1,470,000 gallons per hour and uses an induced draft system. It uses no chromium additives, and the only pollutant emitted is particulate matter. Calculations of emissions are based on information provided by the manufacturer. A total liquid drift (TLD) of 0.008%, a total dissolved solids (TDS) of 1,200 ppmw, and annual operating hours of 8,760 were used to calculate the emissions indicated in the table below. One of five cells in Cooling Tower #1 has been upgraded to meet the proposed drift elimination values that result in the proposed particulate emission rates. The other four cells will be upgraded as they are needed for cooling. Actual emissions are the same as potential to emit (PTE). The following table summarizes the methodology used to calculate emissions and the results of the calculations for Cooling Tower #1.

Cooling Tower #1

Pollutant	Emission Factor		Source of Emission factor	Emissions	
	Value	Units		Maximum (lb/hr)	Annual (ton/yr)
PM	0.001	lbs/10 ³ gal	Manufacturer's Data	1.18	5.16
PM ₁₀	0.001	lbs/10 ³ gal	Manufacturer's Data	1.18	5.16

Cooling Tower #2 has a circulation capacity of 2,400,000 gallons per hour and uses an induced draft system. It uses no chromium additives, and the only emission is particulate matter. Calculations of emissions are based on information provided by the manufacturer. A TLD of 0.008%, a TDS of 1,200 ppmw, and annual operating hours of 8,760 were used to calculate the emissions indicated in the table below. Cooling Tower #2 has been upgraded to meet the proposed drift elimination values. Actual emissions are the same as potential to emit (PTE). The following table summarizes the methodology used to calculate emissions and the results of the calculations for Cooling Tower #2.

Cooling Tower #2

Pollutant	Emission Factor		Source of Emission factor	Emissions	
	Value	Units		Maximum (lb/hr)	Annual (ton/yr)
PM	0.001	lbs/10 ³ gal	Manufacturer's Data	1.92	8.42
PM ₁₀	0.001	lbs/10 ³ gal	Manufacturer's Data	1.92	8.42

EUG No. 10 - Fugitives

Supplemental information concerning non-VOC fugitives from equipment in ammonia service was submitted by PPCC based on numerous potential sources considered throughout the facility. PPCC offers the following calculations, which is considered to represent a conservatively high estimate, based on the approximate number of components in service and emission factors from “Emission Estimation Technique Manual for Synthetic Ammonia Manufacturing”, March 2004, Table 8.

Fugitive Emissions (Process Piping)

Component Type	Type of Service	Count	Emissions Factors (lb/hr-component)	Potential Emissions	
				(lb/hr)	(ton/yr)
Valves	Gas	50	0.0132	0.66	2.89
	Light Liquid	100	0.0089	0.89	3.90
Pump Seals	Light Liquid	0	0.0439	0.00	0.00
Compressor Seals	Gas	2	0.5027	1.00	4.38
Pressure Relief Valves	Gas	10	0.2293	2.29	10.03
Connectors	All	100	0.0041	0.41	1.80
Open-ended Lines	All	50	0.0038	0.19	0.83
Sampling Connections	All	50	0.0331	1.66	7.27
Total				7.10	31.10

Emissions Summary

The following table is a condensed summary of the calculated emissions. Since Oklahoma rules require reporting the back half of the sampling train when testing for PM₁₀, the value for PM is used as PM₁₀ in setting the permit limits.

EUG/EU	NO _x (TPY)	CO (TPY)	PM ₁₀ (TPY)	VOC (TPY)	SO ₂ (TPY)	NH ₃ (TPY)
EUG No. 1 – Ammonia Plant						
Primary Reformer	52.23	81.16	5.51	5.31	5.93	
Condensate Steam Flash Drum				40.33		3.51
EUG No. 3 – Nitric Acid Plants						
Plant #1 – EU Point 301	58.2					
Plant #3 – EU Point 302	44.2					
Plant #4 – EU Point 303	159.90					3.80
EUG No. 4 – Nitric Acid Heaters						
Plant #1, #3, and #4 – Preheaters	12.87	21.63	1.47	1.41	0.39	
EUG No. 5 – Carbon Dioxide Vent		15.99				
EUG No. 6 - Ammonium Nitrate Plants						
Plant #1 and Plant #2			1.14			0.69
EUG No. 7 - Granulator Scrubbers						
Granulator Scrubber #1, #2, and #3			8.80			30.70
EUG No. 8 - Boilers						
Boiler #1 and Boiler #2	34.36	57.72	3.92	3.78	1.10	

EUG/EU	NO _x (TPY)	CO (TPY)	PM ₁₀ (TPY)	VOC (TPY)	SO ₂ (TPY)	NH ₃ (TPY)
EUG No. 9 - Cooling Towers						
Cooling Tower No. 1			5.16			
Cooling Tower No. 2			8.42			
EUG No. 10 – Fugitives						31.10
Totals	361.76	176.50	34.42	50.83	7.42	69.80

SECTION V. INSIGNIFICANT ACTIVITIES

The insignificant activities identified and justified in the application are duplicated in the following table. Appropriate recordkeeping for these activities is indicated under Paragraph 1 below with an “*”; additional detail is included in the Specific Conditions, as appropriate.

1. * Emissions from storage tanks constructed with a capacity less than 39,894 gallons, which store VOC with a vapor pressure less than 1.5 psia at maximum storage temperature. There are no tanks storing VOC at the facility. The applicant lists the following tanks.

Name and Contents	Capacity (gallons)
Ammonia Storage Tank	5,640,000
Wastewater Storage Tank	1,000,000
Nitric Acid Storage Tank	396,800
Ammonium Nitrate Storage Tank	267,300
U.A.N. Mix Tank	62,600
2 – U.A.N. Storage Tanks	3,610,000 - each
Treated Water Storage Tank	50,000
5 – Ammonia Storage Tanks	78,800 - each

2. * Activities having the potential to emit no more than 5 TPY (actual) of any criteria pollutant. The ammonia storage flare is used only in case of emergency/equipment malfunction, primarily when there is a power failure affecting the ammonia storage tank refrigeration systems. There are primary and secondary refrigeration compressors on the storage tank that are connected to different electrical services. As ammonia product is pumped to the tank, the tendency is for some ammonia to vaporize out of the liquid state at the top of the tank. This vapor is then picked up by the primary refrigeration unit, which converts it back to liquid and then sends it in a return loop back into the tank. If a power failure occurs affecting the primary unit, the secondary unit is engaged and the refrigeration return loop is continued. This transition to the secondary unit (or backup refrigeration system) happens very quickly, usually occurring in less than 5 minutes, and would not likely result in any ammonia being vented to the flare. If a power failure occurs affecting both the primary and the secondary refrigeration compressors, the ammonia plant would also be affected, or shut down. Thus, the only potential scenario whereby ammonia would be vented to the flare occurs due to a rise in the temperature of the tank as it is affected by ambient conditions. This temperature rise is somewhat controlled by an 8-inch layer of insulation installed on the tank. Once the temperature of the tank is sufficient to vaporize the liquid ammonia, a pressure vent releases, and the

vapor is released to the flare. The ammonia storage tank pressure relief vent is set to open when total pressure rises above maximum storage pressure by a margin of 1.5 psig. Note that a power failure affecting both refrigeration units would be extremely rare. Historical experience indicates that a power failure of this type has only happened two or three times, with a maximum electrical system downtime of two hours. An employee of the previous operator recalls that the flare operated only three times during the last three years that the plant was in operation. The Ammonia Storage Flare Pilot runs continuously so that the flare is ready to be ignited whenever needed. Emissions from the Ammonia Storage Flare Pilot are generated from the combustion of natural gas on a constant schedule. The maximum heat input rating of the Ammonia Storage Flare Pilot is 0.0152 MMBtu/hour. Operating 8,760 hours annually equates to a fuel demand of 133 MMBtu/year. Calculations of combustion emissions are based on the emission factors listed in the table below and the fuel demand of 133 MMBtu/year, which equates to a natural gas fuel input of 0.1305 MMscf/year based on a gross calorific value of 1,020 Btu/scf. Actual emissions are the same as potential to emit (PTE). The following table summarizes the methodology used to calculate emissions and the results of the calculations for the total combined emissions for the flare.

Pollutant	Emission Factor		Source of Emission factor	Emissions	
	Value	Units		Maximum (lb/hr)	Annual (ton/yr)
CO	84.0	lbs/MMscf	AP-42; Table 1.4-1	0.00125	0.0055
NO _x	50.0	lbs/MMscf	AP-42; Table 1.4-1	0.00075	0.0033
PM	7.6	lbs/MMscf	AP-42; Table 1.4-2	0.00011	0.0005
PM ₁₀	5.7	lbs/MMscf	AP-42; Table 1.4-2	0.00008	0.0004
SO ₂ *	1.5	lbs/MMscf	AP-42; Table 1.4-2	0.00002	0.0001
VOC	5.5	lbs/MMscf	AP-42; Table 1.4-2	0.00008	0.0004

* See discussion above under Primary Reformer emissions for derivation of emission factor.

For emissions generated when burning ammonia in the flare, the applicant has estimated emissions based on a technical bulletin published by the Texas Commission on Environmental Quality (TCEQ) for burning waste gas containing ammonia. The flare is a smokeless flare designed to burn waste ammonia at a rate of approximately 1,405 lb ammonia/hr from the storage tank. The flare system has a 99% destruction efficiency for ammonia. The TCEQ bulletin works an example emissions calculation for a waste gas stream containing mostly ethylene, ethane, and butane, with smaller amounts of propylene, propane, ammonia, and hydrogen (by mass content).

To estimate emissions generated from the flare at the Pryor Plant Chemical Company facility, PPCC converted the mass of ammonia burned (1,405 lbs/hr) to a volumetric flow rate of 530 scfm and estimated that a volume of assist natural gas of 250 scfm is needed to bring the heat input value of the mixture to 566 Btu/scf for proper combustion, for a total gas mixture flow rate of 780 scf/minute. PPCC then used the emission factors from the bulletin to calculate emissions of NO_x and CO and assumed that excess ammonia not converted to NO_x is converted to inert products such as nitrogen and water. The emission factor for NO_x from the TCEQ bulletin happens to be twice that of the factor found in Table 13.5-1 of AP-

42 for industrial flares. The AP-42 bulletin states that waste gases to be flared must have a fuel value of at least 200 to 250 Btu/ft³ for complete combustion; otherwise fuel must be added. Further into the discussion, the bulletin states that flare gases with less than 450 Btu/ft³ do not smoke. It also states that in some cases, even flaring waste gases having the necessary heat content will also require supplemental heat and that if fuel-bound nitrogen is present, flaring ammonia with a heating value of 365 Btu/ft³ will require higher heat to minimize nitrogen oxides (NO_x) formation. Therefore, it appears based on this limited information, that PPCC has chosen the proper range of fuel heat value to minimize smoke and NO_x emissions. PPCC's estimates of emissions are:

NO_x emissions:

$$0.138 \text{ lb/MMBtu} \times 566 \text{ Btu/scf} \times 1 \text{ MMBtu}/10^6 \text{ Btu} \times 780 \text{ scf/min} \times 60 \text{ min/hr} = 3.66 \text{ lb/hr}$$

CO emissions:

$$0.2755 \text{ lb/MMBtu} \times 566 \text{ Btu/scf} \times 1 \text{ MMBtu}/10^6 \text{ Btu} \times 780 \text{ scf/min} \times 60 \text{ min/hr} = 7.30 \text{ lb/hr}$$

Emission rates in ton/yr have not been calculated due to the limited amount of time the system would be venting to the flare under emergency conditions.

SECTION VI. PREVENTION OF SIGNIFICANT DETERIORATION ANALYSIS

Following is PPCC's text explanation for the Best Available Control Technology Analysis, with slight modifications by AQD.

A. Best Available Control Technology Analysis

Pursuant to the PSD regulations, a Best Available Control Technology (BACT) analysis is a required part of a PSD permit application for each new emission unit and for each affected emission unit that is undergoing a physical change or change in the method of operation that results in a significant increase in emissions. The BACT analysis is a case-by-case analysis that takes into account technical feasibility, energy and environmental impacts, and cost. An integral part of the BACT analysis is a search of the US EPA's RACT/BACT/LAER Clearinghouse (RBLC).

All potentially affected sources were included as part of the BACT analysis. Specifically, a BACT analysis was conducted for the following sources:

- #4 Ammonia Plant
- #1, #3 and #4 Nitric Acid Plants
- #1, #3, and #4 Nitric Acid Preheaters
- Carbon Dioxide Vent
- #1 and #2 Ammonium Nitrate Plants
- Granulator System

- #1 and #2 Boilers
- #1 and #2 Cooling Towers

Although it varies from source to source based on the type of operation, a BACT analysis was conducted for particulate matter (PM/PM₁₀), VOC, NO_x, and CO as if a significant increase in the emissions of these pollutants had occurred at each emissions unit.

The BACT analysis in this application follows the "top-down" approach. The following are the five basic steps of a "top-down" BACT analysis:

- Step 1: Identify all control technologies.
- Step 2: Eliminate technically infeasible options.
- Step 3: Rank remaining control technologies by control effectiveness.
- Step 4: Evaluate most effective controls and document results.
- Step 5: Select BACT and document the selection as BACT.

Ammonia Plant #4 - Carbon Monoxide (CO)

Step 1: Identify All Control Technologies.

A search of the RBLC was conducted to identify technologies for the control of carbon monoxide emissions from the Primary Reformer at Ammonia Plant #4. There were no entries for emissions from ammonia plants in the database. However, because the CO emissions from the ammonia plants at PPCC are due to the natural gas combustion at the primary reformers, a more appropriate RBLC search for carbon monoxide emissions would be for natural gas combustion. Therefore, a search of the RBLC was conducted to identify control technologies for the control of CO emissions from natural gas-fired boilers. Due to the magnitude and similarity of results returned for this type of source, a search was only conducted from January 2002 to present. Heaters present at these facilities are also included. Two boilers having heat input capacities much larger than the reformer were not included, as it is realized that they may be required to meet a more stringent BACT limit and operate at a higher control efficiency to comply with NAAQS or other additional limitations. They were the two boilers at the Virginia Power - Possum Point, rated at 2,350 MMBTUH and 1,150 MMBTUH and each having equivalent BACT limits of 0.0234 lbs/MMBtu. Additionally, numerous emissions rates at the Georgia-Pacific plant (LA-0174) seemed unusually high when converted to the basis of lbs/MMBtu and were not included. The following tables summarize the results of the search. Because the applicant requested an AP-42 emission factor as the BACT limit, the BACT limits for the selected facilities listed below were converted to units of lbs/MMBtu when sufficient information was available for comparison.

Control Equipment	Number of Facilities
No Controls Listed	53

Natural Gas Combustion Equipment (Boilers/Pre-Heaters/Reformer) – CO

RBLC ID	Facility Name	Control Technology	RBLC Emission Rate	Emission Rate (lb/MMBtu)
OH-0309	Daimler Chrysler Corporation (2) Boilers – 20.4 MMBTUH	No Control	1.7 lb/hr (LAER)	0.083
NV-0044	Harrah's Entertainment Boiler - 35.4 MMBTUH	No Control	0.036 lb/MMBtu	0.036
NV-0046	Kern River Gas Boiler - 3.85 MMBTUH	No Control	0.083 lb/MMBtu	0.083
CA-1127	Genentech Boiler - 97 MMBTUH	No Control	50 ppm	NA
AK-0062	PB Exploration Heater – 34 MMBTUH Heater - 14.87 MMBTUH Reboiler – 1.34	No Control	0.10 lb/MMBtu 0.12 lb/MMBtu 0.15 lb/MMBtu	0.10 0.12 0.15
OH-0252	Duke Energy – Hanging Rock (2) Boilers - 13.31 MMBTUH	No Control	1.13 lb/hr	0.037
AZ-0047	Dome Valley Energy Boiler - 38 MMBTUH	No Control	0.08 lb/MMBtu	0.080
WI-0227	WEPCO Boiler – 97.1 MMBTUH Heater – 10 MMBTUH	No Control	7.77 lb/hr 0.47 lb/hr	0.080 0.047
WI-0226	Wisconsin Public Service Boiler - 46.2 MMBTUH	No Control	1.67 lb/hr	0.036
AR-0077	Steelcorr – Bluewater Boiler - 22 Boiler – 51 Tunnel Furnace – 160 MMBTUH	No Control	0.84 lb/MMBtu 0.84 lb/MMBtu 0.037 lb/MMBtu	0.84 0.84 0.037
MN-0053	Minnesota Municipal Power Boiler – 40 MMBTUH	No Control	0.084 lb/MMBtu	0.084
WV-0021	Cabot Corporation Boiler - 42.5 MMBTUH * Heater - 42.5 MMBTUH *	No Control	3.5 lb/hr 3.5 lb/hr	0.082 0.082
NV-0037	Sempra Energy Boiler – 60 MMBTUH	No Control	0.08 lb/MMBtu	0.080
AL-0191	Hyundai Motors (3) Boilers - 50 MMBTUH	No Control	4.5 lb/hr	0.090
WI-0207	Ace Ethanol Boiler – 60 MMBTUH Boiler – 80 MMBTUH Boiler – 11 MMBTUH Boiler - 34 MMBTUH	No Control	0.08 lb/MMBtu 0.08 lb/MMBtu 0.08 lb/MMBtu 0.08 lb/MMBtu	0.08 0.08 0.08 0.08
OR-0039	People's Energy (2) Boilers – 80 MMBTUH	No Control	0.037 lb/MMBtu 0.037 lb/MMBtu	0.037 0.037
MN-0054	Mankato Energy Center Boiler – 70 MMBTUH	No Control	0.06 lb/MMBtu	0.06
IN-0108	Nucor Steel (2) Boilers – 34 MMBTUH	No Control	0.061 lb/MMBtu 0.061 lb/MMBtu	0.061 0.061
AZ-0049	Allegheny Energy – La Paz Boiler – 41 MMBTUH Boiler - 55.34 MMBTUH	No Control	0.09 lb/MMBtu 0.14 lb/MMBtu	0.09 0.14

RBLC ID	Facility Name	Control Technology	RBLC Emission Rate	Emission Rate (lb/MMBtu)
OH-0254	Duke Energy – Washington Co. Boiler - 30.6 MMBTUH	No Control	3.34 lb/hr	0.109
TX-0458	Duke Energy – Jack County Boiler – 36 MMBTUH	No Control	1.4 lb/hr	0.039
OH-0276	Charter Manufacturing Boiler - 28.6 MMBTUH	No Control	2.35 lb/hr	0.082
GA-0098	Genpower Rincon Boiler - 83 MMBTUH	No Control	0.093 lb/MMBtu	0.093
VA-0271	City of Harrisonburg 43.2 MMBTUH	No Control	3.56 lb/hr	0.082
OK-0090	Duke Energy Boiler - 33 MMBTUH	No Control	0.085 lb/MMBtu	0.085
OR-0040	Klamath Generation Boiler – 50,000 lb/hr	No Control	0.035 lb/MMBtu	0.035
PA-0216	J&L Specialty Steel Boiler - 33.5 MMBTUH	No Control	2.75 lb/hr	0.082
WA-0291	Wallula Generation Boiler - 55.3 MMBTUH	No Control	111 ppm	NA
TX-0389	Degussa Engineered Carbons Boiler – 13.4 MMBTUH	No Control	1.11 lb/hr	0.083
IA-0062	Interstate Power and Light Boiler - 68 MMBTUH	No Control	0.0164 lb/MMBtu	0.0164
TX-0354	Atofina Chemicals (2) Boilers – 15.8 MMBTUH	No Control	1.33 lb/hr	0.084
VA-0243	Stanley Furniture Boiler - 26.5 MMBTUH	No Control	9.4 ton/yr	0.081
TX-0408	Indian Rock Gathering Co. (2) Boilers – 6 MMBTUH	No Control	0.50 lb/hr	0.083
VA-0260	Cogentrix Energy (2) Boilers - 40 MMBTUH	No Control	2.9 lb/hr	0.0725
VA-0255	Virginia Power ** Boiler - 99 MMBTUH	No Control	14.9 lb/hr	0.151
GA-0101	Duke Energy – Murray Boiler - 31.4 MMBTUH	No Control	0.037 lb/MMBtu	0.037
AL-0192	Honda – Alabama Boiler - 30 MMBTUH	No Control	2.52 lb/hr	0.084
CA-1023	LA County Services Boiler - 39 MMBTUH	No Control	100 ppm	NA
OH-0248	Calpine – Lawrence Boiler – 99 MBTUH	No Control	8.32 lb/hr	0.084
VA-0261	Competitive Power – Cunningham Creek Boiler - 80 MMBTUH	No Control	6.42 lb/hr	0.080
AR-0070	Genova Arkansas Boiler – 33 MMBTUH	No Control	0.04 lb/MMBtu	0.040
IA-0060	Entergy – Hawkeye Boiler - 48.69 MMBTUH	No Control	0.073 lb/MMBtu	0.073
AL-0185	Barton Shoals (2) Boilers – 40 MMBTUH	No Control	0.082 lb/MMBtu	0.082
NM-0044	Duke Energy Curry (2) Boilers – 33 MMBTUH	No Control	4.9 lb/hr	0.148

RBLC ID	Facility Name	Control Technology	RBLC Emission Rate	Emission Rate (lb/MMBtu)
OK-0070	Genova Oklahoma Power Boiler – 33 MMBTUH	No Control	0.037 lb/MMBtu	0.037
OK-0072	RedBud Energy Boiler – 93 MMBTUH	No Control	0.07 lb/MMBtu	0.07
IA-0058	MidAmerican Energy – Des Moines Boiler – 68 MMBTUH	No Control	0.084 lb/MMBtu	0.084
TN-0153	Williams Refining Heater – 209 MMBTUH Heater – 9.1 MMBTUH Heater – 500 MMBTUH (2) Heaters 166.5 MMBTUH Heater – 42.2 MMBTUH Reboiler – 166.5 MMBTUH Boiler – 95 MMBTUH Boiler – 180 MMBTUH Reboiler – 54 MMBTUH	No Control	0.07 lb/MMBtu 0.035 lb/MMBtu 0.01 lb/MMBtu 0.01 lb/MMBtu 0.01 lb/MMBtu 0.01 lb/MMBtu 0.09 lb/MMBtu 0.18 lb/MMBtu 0.10 lb/MMBtu	0.07 0.035 0.01 0.01 0.01 0.01 0.09 0.18 0.10
AR-0051	Duke Energy – Jackson Boiler – 33 MMBTUH	No Control	0.15 lb/MMBtu	0.15
OK-0055	Mustang Power – Mustang Boiler – 31 MMBTUH	No Control	0.084 lb/MMBtu	0.084
OK-0056	Mustang Power – Horseshoe NA	No Control	0.084 lb/MMBtu	0.084
LA-0174	GP Port Hudson Boiler – 987 MMBTUH	No Control	76.31 lb/hr	0.077
NC-0094	Genpower – Earleys Boiler – 83 MMBTUH	No Control	6.84 lb/hr	0.082

* Based on natural gas input rating, 8,760 hrs/yr operation, and heating value of 1,020 Btu/scf.

** One boiler rated at 2350 MMBTUH and one at 1,150 MMBTUH, each having equivalent BACT limits of 0.0234 lbs/MMBtu are not included in this analysis.

Step 2: Eliminate Technically Infeasible Options.

None

Step 3: Rank Remaining Control Technologies by Control Effectiveness.

No control technologies were listed for the control of CO emissions at natural gas-fired sources.

Step 4: Evaluate Most Effective Controls and Document Results.

No Control or Good Combustion or Boiler Design: All entries in the RBLC specified no control or good combustion practices as meeting the BACT requirement for the control of CO emissions from natural gas-fired sources. As observed from the table above, many of the BACT limits are an AP-42 emissions factor. Therefore, that limit is appropriate as BACT for this permit and is supported with air dispersion modeling.

Step 5: Select BACT.

Based on the analysis provided above, good combustion practice is selected to control the emissions of carbon monoxide from the natural gas-fired Primary Reformer for Ammonia Plant #4 at PPCC. Well over half of the facilities reviewed have BACT limits near or exceeding the AP-42 emissions factor of 0.084 lb/MMBtu. Therefore, the emission factor of 0.083 lb/MMBtu used for the Primary Reformer, which is similar to natural gas-fired boilers found at a majority of the facilities listed in the RBLC, and the use of good combustion is selected as BACT for CO.

Ammonia Plant #4 - Nitrogen Oxides (NO_x)

Step 1: Identify All Control Technologies.

A search of the RBLC was conducted to identify technologies for the control of NO_x emissions from Primary Reformer at Ammonia Plant #4. There were no entries for emissions from ammonia plants in the database. However, because the NO_x emissions from the ammonia plants at PPCC are due to the natural gas combustion at the primary reformers, a more appropriate RBLC search for NO_x emissions would be for natural gas combustion. Therefore, a search of the RBLC was conducted to identify control technologies for the control of NO_x emissions and emission rates from natural gas-fired boilers. Due to the magnitude and similarity of results returned for this type of source, a search was only conducted from January 2002 to present. The following tables summarize the results of the search.

Control Equipment	Number of Facilities
No Controls Listed	4
Low NO _x Burners	55

Natural Gas Combustion Equipment (Boilers/Pre-Heaters/Reformer) – NO_x

RBLC ID	Facility Name	Control Technology	RBLC Emission Rate	Emission Rate (lb/MMBtu)
NV-0046	Kern River Gas Boiler - 3.85 MMBTUH	No Control	0.1010 lb/MMBtu	0.101
WI-0227	WEPCO Boiler – 97.1 MMBTUH Heater – 10 MMBTUH	No Control	13.7 lb/hr 0.100 lb/MMBTU	0.142 0.100
OR-0040	Klamath Generation Boiler – 50,000 lb/hr	No Control	30 ppm	NA

RBLC ID	Facility Name	Control Technology	RBLC Emission Rate	Emission Rate (lb/MMBtu)
TN-0153	Williams Refining Heater – 209 MMBTUH Heater – 9.1 MMBTUH Heater – 500 MMBTUH (2) Heaters 166.5 MMBTUH Heater – 42.2 MMBTUH Reboiler – 166.5 MMBTUH Boiler – 95 MMBTUH Boiler – 180 MMBTUH Reboiler – 54 MMBTUH	No Control	0.030 lb/MMBtu 0.140 lb/MMBtu 0.600 lb/MMBtu 0.050 lb/MMBtu 0.073 lb/MMBtu 0.050 lb/MMBtu 0.084 lb/MMBtu 0.060 lb/MMBtu 0.060 lb/MMBtu	0.030 0.140 0.600 0.050 0.073 0.050 0.084 0.060 0.060
OH-0309	Daimler Chrysler Corporation (2) Boilers – 20.4 MMBTUH	Low NO _x Burner	0.72 lb/hr (LAER)	0.035
NV-0044	Harrah's Entertainment Boiler - 35.4 MMBTUH	Low NO _x Burner	0.035 lb/MMBtu	0.035
CA-1127	Genentech Boiler - 97 MMBTUH	Low NO _x Burner	9 ppm	NA
AK-0062	PB Exploration Heater – 34 MMBTUH Heater - 14.87 MMBTUH Reboiler – 1.34	Low NO _x Burner	0.095 lb/MMBtu Not Listed 0.08 lb/MMBtu	0.095 NA 0.08
OH-0252	Duke Energy – Hanging Rock (2) Boilers - 13.31 MMBTUH	Low NO _x Burner	1.07 lb/hr	0.08
AZ-0047	Dome Valley Energy Boiler - 38 MMBTUH	Low NO _x Burner	0.37 lb/MMBtu	0.37
AL-0212	Hyundai Motors Boiler - 24.5 MMBTUH	Low NO _x Burner	0.35 lb/MMBtu	0.35
WI-0226	Wisconsin Public Service Boiler - 46.2 MMBTUH	Low NO _x Burner	1.67 lb/hr	0.036
AR-0077	Steelcorr – Bluewater Boiler - 22 Boiler – 51 Tunnel Furnace – 160 MMBTUH	Low NO _x Burner	0.08 lb/MMBtu 0.08 lb/MMBtu 0.10 lb/MMBtu	0.08 0.08 0.10
MN-0053	Minnesota Municipal Power Boiler – 40 MMBTUH	Low NO _x Burner	0.04 lb/MMBtu	0.04
WV-0021	Cabot Corporation Boiler - 42.5 MMBTUH * Heater - 42.5 MMBTUH *	Low NO _x Burner	2.08 lb/hr 2.09 lb/hr	0.049 0.049
NV-0037	Sempra Energy Boiler – 60 MMBTUH	Low NO _x Burner	0.035 lb/MMBtu	0.035
ID-0015	J.R. Simplot Company Boiler – 64 MMBTUH Boiler - 175 MMBTUH	Low NO _x Burner	2.88 lb/hr (RACT) 7.0 lb/hr	0.045 0.040
AL-0191	Hyundai Motors (3) Boilers - 50 MMBTUH	Low NO _x Burner	1.75 lb/hr	0.035
AR-0076	Pine Bluff Arsenal (3) Boilers - 28.4 MMBTUH (2) Boilers - 11.7 MMBTUH Boiler - 1.4 MMBTUH	Low NO _x Burner	1.5 lb/hr 0.6 lb/hr 0.2 lb/hr	0.053 0.051 0.143

RBLC ID	Facility Name	Control Technology	RBLC Emission Rate	Emission Rate (lb/MMBtu)
OK-0097	Quad Graphics Boiler – Rating Not Listed Heater – 16 MMBTUH	Low NO _x Burner	0.035 lb/MMBtu 2.48 lb/hr	0.035 0.155
WI-0207	Ace Ethanol Boiler – 60 MMBTUH Boiler – 80 MMBTUH Boiler – 11 MMBTUH Boiler - 34 MMBTUH	Low NO _x Burner	0.04 lb/MMBtu 0.04 lb/MMBtu 0.04 lb/MMBtu 0.04 lb/MMBtu	0.04 0.04 0.04 0.04
OR-0039	People's Energy (2) Boilers – 80 MMBTUH	Low NO _x Burner	0.035 lb/MMBtu	
MN-0054	Mankato Energy Center Boiler – 70 MMBTUH	Low NO _x Burner	0.036 lb/MMBtu	0.036
IN-0108	Nucor Steel (2) Boilers – 34 MMBTUH	Low NO _x Burner	0.035 lb/MMBtu	0.035
MI-0355	Abbott Laboratories Boiler - 98.51 MMBTUH	Low NO _x Burner	0.08 lb/MMBtu	0.08
AZ-0049	Allegheny Energy – La Paz Boiler – 41 MMBTUH Boiler - 55.34 MMBTUH	Low NO _x Burner	0.027 lb/MMBtu 0.036 lb/MMBtu	0.027 0.036
OH-0254	Duke Energy – Washington County Boiler - 30.6 MMBTUH	Low NO _x Burner	1.08 lb/hr	0.035
TX-0458	Duke Energy – Jack County Boiler – 36 MMBTUH	Low NO _x Burner	1.3 lb/hr	0.036
OH-0276	Charter Manufacturing Boiler - 28.6 MMBTUH	Low NO _x Burner	2.8 lb/hr	0.098
WA-0316	Northwest Pipeline Corp. Boiler - 4.19 MMBTUH	Low NO _x Burner	34 ppm	NA
GA-0098	Genpower Rincon Boiler - 83 MMBTUH	Low NO _x Burner	0.055 lb/MMBtu	0.055
VA-0271	City of Harrisonburg 43.2 MMBTUH	Low NO _x Burner	6.17 lb/hr	0.143
OK-0090	Duke Energy Boiler - 33 MMBTUH	Low NO _x Burner	0.05 lb/MMBtu	0.05
PA-0216	J&L Specialty Steel Boiler - 33.5 MMBTUH	Low NO _x Burner	30 ppm	NA
WA-0291	Wallula Generation Boiler - 55.3 MMBTUH	Low NO _x Burner	30 ppm	NA
TX-0389	Degussa Engineered Carbons Boiler – 13.4 MMBTUH	Low NO _x Burner	1.4 lb/hr	0.104
IA-0062	Interstate Power and Light Boiler - 68 MMBTUH	Low NO _x Burner	0.049 lb/MMBtu	0.049
TX-0354	Atofina Chemicals (2) Boilers – 15.8 MMBTUH	Low NO _x Burner	2.05 lb/hr	0.130
TX-0408	Indian Rock Gathering Co. Boiler - 6 MMBTUH	Low NO _x Burner	0.59 lb/hr	0.098
VA-0260	Cogentrix Energy (2) Boilers - 40 MMBTUH	Low NO _x Burner	3.2 lb/hr	0.08
VA-0255	Virginia Power ** Boiler - 99 MMBTUH	Low NO _x Burner	0.036 lb/MMBtu	0.036

RBLC ID	Facility Name	Control Technology	RBLC Emission Rate	Emission Rate (lb/MMBtu)
GA-0101	Duke Energy – Murray Boiler - 31.4 MMBTUH	Low NO _x Burner	30 ppm	NA
AL-0192	Honda – Alabama (3) Boilers – 30 MMBTUH	Low NO _x Burner	1.05 lb/hr	0.05
CA-1023	LA County Services Boiler - 39 MMBTUH	Low NO _x Burner	9 ppm	NA
OH-0248	Calpine – Lawrence Boiler – 99 MBTUH	Low NO _x Burner	4.95 lb/hr	0.05
VA-0261	Competitive Power – Cunningham Creek Boiler - 80 MMBTUH	Low NO _x Burner	3.82 lb/hr	0.048
AR-0070	Genova Arkansas Boiler – 33 MMBTUH	Low NO _x Burner	0.04 lb/MMBtu	0.04
IA-0060	Entergy – Hawkeye Boiler - 48.69 MMBTUH	Low NO _x Burner	0.034 lb/MMBtu	0.034
AL-0185	Barton Shoals (2) Boilers – 40 MMBTUH	Low NO _x Burner	0.05 lb/MMBtu	0.05
TX-0437	Hartburg Power Boiler – 40 MMBTUH	Low NO _x Burner	Not Listed	NA
NM-0044	Duke Energy Curry (2) Boilers – 33 MMBTUH	Low NO _x Burner	1.2 lb/hr	0.036
OK-0070	Genova Oklahoma Power Boiler – 33 MMBTUH	Low NO _x Burner	0.035 lb/MMBtu	0.035
OK-0072	RedBud Energy Boiler – 93 MMBTUH	Low NO _x Burner	0.075 lb/MMBtu	0.075
IA-0058	MidAmerican Energy – Des Moines Boiler – 68 MMBTUH	Low NO _x Burner	0.05 lb/MMBtu	0.05
AR-0051	Duke Energy – Jackson Boiler – 33 MMBTUH	Low NO _x Burner	0.035 lb/MMBtu	0.035
OK-0055	Mustang Power – Mustang Boiler – 31 MMBTUH	Low NO _x Burner	0.01 lb/MMBtu	0.01
OK-0056	Mustang Power – Horseshoe NA	Low NO _x Burner	0.10 lb/MMBtu	0.10
LA-0174	GP Port Hudson Boiler – 987 MMBTUH	Low NO _x Burner	61.34 lb/hr	0.062
NC-0094	Genpower – Earleys Boiler – 83 MMBTUH	Low NO _x Burner	4.07 lb/hr	0.049

Step 2: Eliminate Technically Infeasible Options.

None

Step 3: Rank Remaining Control Technologies by Control Effectiveness.

Only low NO_x technology was listed for the control of NO_x emissions at natural gas-fired boilers.

Step 4: Evaluate Most Effective Controls and Document Results.

No Control or Good Combustion or Boiler Design: All but 4 entries in the RBLC specified low NO_x burners as meeting the BACT requirement for the control of NO_x emissions from natural gas-fired boilers.

Step 5: Select BACT.

The manufacturer of the natural gas-fired Primary Reformer has provided a maximum NO_x emission rate of 0.053 lb/MMBtu. Based on the analysis provided above, over half of the facilities listed have BACT limits that equal or exceed this value for natural gas-fired boilers equipped with low NO_x burners. Therefore, the manufacturer's guaranteed emission rate of 0.053 lb/MMBtu with the use of low NO_x burners is selected as BACT for NO_x emissions from the Primary Reformer at Ammonia Plant #4.

#4 Ammonia Plant - Volatile Organic Compounds (VOC)

Step 1: Identify All Control Technologies.

A search of the RBLC was conducted to identify technologies for the control of VOC emissions from ammonia plants. There were no entries for emissions from ammonia plants in the database. VOC emissions from the Ammonia Plant #4 at PPCC result from the Condensate Steam Flash Drum (EU ID 102). The Condensate Knockout Drum dumps into the Flash Drum, which is utilized in the process to condense ammonia entrained in the gas for subsequent reuse; therefore, the Flash Drum operates as an ammonia control device. Due to the relatively low VOC emission rate from the Flash Drum and no entries in the RBLC, there is no emission reduction technology identified for the control of VOC emissions at the ammonia plant. The Pryor Plant will also regenerate the carbon in the desulfurization unit, but VOC emissions are eliminated because the resulting gas is fired as a fuel in the primary reformers.

Step 2: Eliminate Technically Infeasible Options.

N/A

Step 3: Rank Remaining Control Technologies by Control Effectiveness.

N/A

Step 4: Evaluate Most Effective Controls and Document Results.

N/A

Step 5: Select BACT

Minimizing emissions of methanol will in turn minimize VOC emissions. As discussed earlier in this memorandum, the applicant will accept an enforceable limit of 9.5 ton/yr methanol to maintain its minor source status for HAPs. BACT is selected as proper

operation and monitoring of the Ammonia Plant #4 condensate system to minimize emissions of VOC and limit emissions of methanol below 9.5 TPY.

#4 Ammonia Plant - Volatile Organic Compounds (PM)

Based on emissions of PM, it follows from the analysis for CO that any control device installed for purposes of reducing PM emissions would be cost prohibitive.

Nitric Acid Plants #1, #3, and #4 - Nitrogen Oxides (NO_x)

Step 1: Identify All Control Technologies.

A search of the RBLC identified the following technologies for the control of NO_x emissions from nitric acid plants.

Control Equipment	Number of Facilities
Nonselective Catalytic Reduction (NSCR)	2
Selective Catalytic Reduction (SCR)	1
SCR with Absorption and a Bleaching Tower	1
SCR with Hydrogen Peroxide Injection	2

Lower emissions rates documented at the Agrium - Kennewick and Homestead facilities, and also a facility permitted in Oklahoma not included in the RBLC clearinghouse, prompted additional research to investigate in more depth the technologies used at these facilities to justify requested BACT limits at PPCC. According to an updated Technical Support Document (TSD) recently issued by the Washington State Department of Ecology (WSDE) relative to the Agrium – Kenniwick, Washington nitrogen-based fertilizer plant, the following processes are options for controlling NO_x emissions from the type of nitric acid manufacturing facilities installed at PPCC. A copy of the TSD, updated by the WSDE on June 4, 2008, is included as Attachment A:

- Uhde EnviNO_x
- Dry absorption
- SCONOXTM
- Hydrogen peroxide injection to the absorption column
- Molecular sieve adsorption
- Selective catalytic reduction (SCR)
- Non-selective catalytic reduction (NSCR)
- Urea scrubbing
- Refrigerated extended absorption
- Caustic scrubbing
- Ammonia scrubbing

The following tables summarize the results of this expanded search, and includes facilities that are not in the RBLC.

Control Equipment	Number of Facilities
Non-Selective Catalytic Reduction	2
Non-Selective Catalytic Reduction + Selective Catalytic Reduction	1
Extended Absorption + Non-Selective Catalytic Reduction	1
Extended Absorption + Selective Catalytic Reduction	4
Selective Catalytic Reduction	2
Hydrogen Peroxide Injection	1

Reference	Facility Name/Location	Control Technology	Date Issued	NO _x Emission Limit/Averaging Period
EPA Report (1991) ¹	First Chemical Corporation Pascagoula, Mississippi	Extended Absorption w/ SCR	Unknown	0.57 lb/ton/unknown
RBLC ID: LA-0108	Arcadian Fertilizer LP Geismar, Louisiana	NSCR	January 1997	2.14 lb/ton (Primary) ² /annual 3.0 lb/ton (Secondary)/3-hour
RBLC ID: OK-0034	Terra Nitrogen Woodward, Oklahoma	SCR	February 1998	3.0 lb/ton/unknown
Operating Permit	Terra Nitrogen Verdigris, Oklahoma	SCR	Unknown	3.0 lb/ton/unknown
WSDE TSD	El Dorado Nitrogen El Dorado, Texas	Extended Absorption w/ SCR	1999	0.3 lb/ton ³ /unknown
Operating Permit	KOCH Nitrogen Enid, Oklahoma	Extended Absorption w/ NSCR + Bleach Tower ⁴	Unknown	1.1 lb/ton/unknown
RBLC ID: NE-0038	Agrium U.S., Inc. Homestead, Nebraska	Extended Absorption w/ SCR + Bleach Tower ⁴	June 15, 2004	1.1 lb/ton/annual 210 ppm/3-hour rolling
RBLC ID: WA-0318	Agrium U.S., Inc. Kennewick, Washington	NSCR + SCR (Plant 7) H ₂ O ₂ Injection (Plant 9)	August 2004	<u>Plant 7</u> 0.524 lb/ton/annual 140 lb/day (Nov-Apr) 190 lb/day (May-Oct) <u>Plant 9</u> 0.3 lb/ton ⁵ /annual
RBLC ID: GA-0109	PCS Nitrogen Fertilizer Augusta, Georgia	NSCR	May 2005	2.14 lb/ton/annual 3.0 lb/ton/3-hour
Operating Permit	Coffeyville Resources Nitrogen Fertilizers, LLC Coffeyville, Kansas	Extended Absorption w/ SCR	August 2007	0.6 lb/ton/annual 0.8624 lb/ton/7-day (non-SSM) 1,440 lb/7-day (SSM)
US District Court/EPA Compliance Order	Royster Clark/Agrium North Bend, Ohio	Extended Absorption w/ SCR	February 2007	0.6 lb/ton/unknown
RBLC ID: WA-0318	Agrium U.S., Inc. Kennewick, Washington	NSCR + SCR (Plant 7) H ₂ O ₂ Injection (Plant 9)	July 2008	<u>Plant 7</u> 0.524 lb/ton/annual 140 lb/day (Nov-Apr) 190 lb/day (May-Oct) <u>Plant 9</u> 0.6 lb/ton ⁶ /annual 400 lb/day (Jan-Dec)

¹ Alternative Control Techniques Document – Nitric and Adipic Acid Manufacturing Plants, EPA-450/3-91-026, EPA, Research Triangle Park, N.C. (Dec. 1991) - included in Attachment B.

² BACT established at 3.0 lb/ton; additional “Primary” limit taken to attain compliance with NAAQS.

³ Facility located in non-attainment area; cost-effectiveness not considered.

⁴ Bleach tower not considered part of BACT applied to primary nitric acid production process; bleaching process is post acid production, purification step; related NO_x emissions/controls considered ancillary to primary production process.

⁵ Interim limit subject to results of innovative technology review of proposed hydrogen peroxide injection process.

⁶ Revised limit based on final results of innovative technology review of hydrogen peroxide injection process.

Step 2: Eliminate Technically Infeasible Options.

The feasibility and emission reduction potential for each of the NO_x control options listed above had been investigated and was discussed in detail in Section 2.3 of the updated TSD or in the original TSD for the Agrium plant, attached as an appendix to the updated version. That detailed discussion will not be repeated here, but can be found as “Attachment A” to the December 17, 2008 revised BACT analysis submittal. WSDE determined that the following NO_x emission control technologies are not feasible for BACT-level emission control for nitric acid plants:

- Uhde EnviNO_x
- Dry absorption
- SCONOXTM
- Molecular sieve adsorption
- Urea scrubbing
- Refrigerated extended absorption
- Caustic scrubbing
- Ammonia scrubbing

The WSDE TSD concludes that the following NO_x control technologies are feasible for nitric acid plants. These findings are consistent with the EPA’s findings (with the exception of hydrogen peroxide addition) in its published document Alternative Control Techniques Document – Nitric and Adipic Acid Manufacturing Plants, which states that “Three control techniques are predominantly used to reduce the level of NO_x emissions in the tail gas [of nitric acid plants in the United States]: (1) extended absorption, (2) non-selective catalytic reduction (NSCR), and (3) selective catalytic reduction (SCR).” A copy of the EPA document is included in “Attachment B” of the December 17, 2007 BACT analysis.

- Hydrogen peroxide injection to the absorption column
- Extended absorption
- Non-selective catalytic reduction
- Selective catalytic reduction

The hydrogen peroxide injection system was initially listed in the RBLC as an experimental system proposed by Agrium under the innovative control technology review guidelines. In June 2008, Agrium reported that the hydrogen peroxide injection system was working, but NO_x emissions could not be reduced to the required 0.3 lb/ton level. After additional review of process/control specifics, in July 2008 WSDE re-issued the Agrium PSD permit with a revised BACT limit of 0.6 lb/ton acid produced. PPCC's recent discussions with Agrium staff indicated that the hydrogen peroxide injection system developed at the Kennewick, Washington facility was a proprietary, site specific design. Because the Best Available Control Technology hydrogen peroxide injection system is not commercially available, it is considered infeasible for NO_x control purposes at PPCC.

Step 3: Rank Remaining Control Technologies by Control Effectiveness.

As indicated in the table in Step 1 above, nitric acid plants being evaluated for NO_x control purposes generally fall into two categories relative to regulatory considerations and technical/economic feasibility: 1) old technology plants without extended absorption equipment, and 2) new technology plants with extended absorption equipment. As indicated in the table, BACT limits issued to date can be clearly delineated between the two plant categories. That is, NO_x emissions from nitric acid plants having extended absorption equipment with an add-on SCR unit have been limited to approximately 40 ppm, or about 0.6 lb/ton acid produced, and those plants with an SCR unit but without extended absorption equipment have been limited to approximately 200 ppm, or about 3.0 lb/ton acid produced. The benefit of the new technology, extended absorption design is that the inlet NO_x concentration to the SCR unit is already reduced to approximately 1,000 ppm. Consequently, the reduction to the 0.6 lb/ton acid produced level can be consistently attained through the 95%+ control efficiency of the SCR unit. Comparatively, an old technology plant without extended absorption equipment typically has a NO_x inlet concentration to the SCR unit of approximately 3,000 ppm. In this case, the same SCR unit control efficiency of 95%+ only reduces the NO_x emission rate to approximately 2.5 lb/ton acid produced. Note here that although the Agrium Plant #7 is an old technology plant without extended absorption equipment, its control configuration (a NSCR unit followed by a SCR unit) performs much like a new technology plant in that the inlet NO_x concentration to the SCR unit has been reduced to approximately 1,000 to 1,500 ppm by the NSCR unit prior to the introduction of the gas stream to the SCR unit. Based on the BACT emission levels listed in the RBLC and the additional information in the WSDE's TSD, extended absorption with a SCR unit or a NSCR unit with a SCR unit have the highest overall control efficiency followed by a NSCR unit or SCR unit only.

NSCR with SCR: This control option includes a NSCR unit followed by a SCR unit to control NO_x emissions. One facility was identified as having this BACT control configuration and was required to achieve a NO_x emission rate of 0.524 lb/ton acid produced.

Extended absorption with SCR: This control option involves extended absorption equipment followed by an add-on SCR unit to control NO_x emissions. Three facilities

were identified with extended absorption equipment and a SCR unit as BACT for the control of NO_x emissions. According to the RBLC/other information sources, these facilities were required to achieve a NO_x emission rate of 0.6 lb/ton acid produced. One facility, located in El Dorado, Texas, was required to achieve a NO_x emission rate of 0.3 lb/ton acid produced. As noted in the table in Step 1, this facility is located in an area of non-attainment and was required to achieve additional NO_x reductions beyond similarly controlled units without benefit of economic considerations.

Extended absorption with NSCR: This control option involves extended absorption equipment followed by an add-on NSCR unit to control NO_x emissions. One facility was identified as having this BACT control configuration and was required to achieve a NO_x emission rate of 1.1 lb/ton acid produced.

SCR or NSCR: This control option involves the installation of a stand-alone NSCR unit or SCR unit to control NO_x emissions. Three facilities were identified with either a NSCR unit or SCR unit as BACT for the control of NO_x emissions. According to the RBLC/other information sources, these facilities were required to achieve a NO_x emission rate of 3.0 lb/ton acid produced. One facility, located in Geismar, Louisiana, was required to achieve a NO_x emission rate of 2.14 lb/ton acid produced. As noted in the table in Step 1, this facility was required to achieve additional NO_x reductions beyond similarly controlled units to demonstrate compliance with the NAAQS.

Step 4: Evaluate Most Effective Controls and Document Results.

According to the RBLC and other information sources, the most effective NO_x control technologies are a NSCR unit with a SCR unit at 0.524 lb/ton acid produced followed by extended absorption equipment with a SCR unit at 0.57 lb/ton acid produced. To achieve the most effective NO_x control levels at PPCC, a NSCR unit or extended absorption equipment would have to be installed on Nitric Acid Plant #4 (old technology plant without extended absorption equipment), and a SCR unit would have to be installed on Nitric Acid Plants #1 and #3 (new technology with the existing extended absorption equipment). However, the costs associated with these control equipment installations is cost-prohibitive; thus, they are considered to be economically infeasible. The following information is provided to support this finding.

For Nitric Acid Plants #1 and #3, PPCC is proposing a BACT limit of 1.6 lb/ton acid produced. If PPCC were to install the control equipment necessary to achieve the lowest BACT level (0.6 lb/ton acid produced) at Nitric Acid Plants #1 and #3, the result would be an additional reduction in NO_x emissions of approximately 36.5 tpy and 27.4 tpy, respectively. These emission rate reductions were determined by comparing the projected emission rate for each plant when using a fumeabator (NO_x emissions at 1.6 lb/ton acid produced) to the emission rate if an SCR unit were installed (NO_x emissions at 0.6 lb/ton acid produced). To determine the economic feasibility of this change in control technology, a cost estimate for an SCR unit was obtained based on an individual plant air flow of 33,000 m³/hr at Nitric Acid Plants #1 and #3. Information in the following table summarizes the cost associated with installing the additional SCR units

on Nitric Acid Plants #1 and #3 at PPCC based on the capital cost spread over a 10 year period at 8% interest. As demonstrated in the table below, it is cost prohibitive for PPCC to install SCR units on the Nitric Acid Plants #1 and #3 to achieve the additional reduction in NO_x emissions.

For Nitric Acid Plant #4, PPCC is proposing to install a SCR unit with a BACT limit of 2.5 lb/ton acid produced. Note that this proposed BACT limit is less than the BACT limit established for similar processes (old technology plants with a SCR unit but without extended absorption equipment) of 3.0 lb/ton acid produced. If PPCC were to install the control equipment necessary to achieve the lowest BACT level (0.6 lb/ton acid produced) at Nitric Acid Plant #4, the result would be an additional reduction in NO_x emissions of approximately 121.4 tpy. This emission rate reduction was determined by comparing the projected emission rate of the plant if installing a SCR unit only (NO_x emissions at 2.5 lb/ton acid produced) to the emission rate if extended absorption equipment was installed along with the SCR unit (NO_x emissions at 0.6 lb/ton acid produced). To determine the economic feasibility of this change in control technology, a cost estimate for extended absorption equipment was obtained for Nitric Acid Plant #4. Information in the following table summarizes the cost associated with installing the extended absorption equipment on Nitric Acid Plant #4 at PPCC based on the capital cost spread over a 10 year period at 8% interest. As demonstrated in the table below, it is cost prohibitive for PPCC to install extended absorption equipment on Nitric Acid Plant #4 to achieve the additional reduction in NO_x emissions.

Control Technology	Emissions Reduction (ton/yr)	Cost Impacts			
		Installation Capital Cost	Annualized Capital Cost ¹	Annual Operating Cost	Cost Effectiveness (\$/ton) ²
SCR Unit (#1 Nitric Acid Plant)	36.5	\$650,000	\$96,850	\$335,000	\$11,832
SCR Unit (#3 Nitric Acid Plant)	27.4	\$650,000	\$96,850	\$335,000	\$15,761
Extended Absorption (#4 Nitric Acid Plant)	121.4	\$12,000,000	\$1,788,000	\$200,000	\$16,375

¹Annualized Capital Cost = (Cost)(A/P_{8%,10}) where (A/P_{8%,10}) is 0.149

²Cost Effectiveness = (Capital Cost + Operating Cost) / Emissions Reduction

Step 5: Select BACT.

To control NO_x emissions from Nitric Acid Plants #1 and #3, BACT is selected as extended absorption equipment with NSCR and with an individual plant emission rate of 1.6 lb/ton acid produced. Continuous compliance with the proposed BACT limits of 1.6 lb/ton for Nitric Acid Plants #1 and #3 will be based on the average emission rate, monitored as lb/ton of 100% acid produced, of all operating hours in a 12-month period.

For Nitric Acid Plant #4, BACT is selected as a SCR unit with a plant emission rate of 2.5 lb/ton acid produced. Continuous compliance with the proposed BACT limits for Nitric Acid Plant #4 will be based on the average emission rate, monitored as lb/ton of 100% acid produced, of all operating hours in a 12-month period. The BACT rate is

consistent with the design specifications and guaranteed NO_x control efficiency provided by the SCR unit vendor.

The annual averaging period proposed for BACT compliance demonstration is consistent with the time periods utilized for NAAQS and PSD Increment ambient air quality standards as well as the most recent PSD permits approved by state regulatory agencies/EPA for nitric acid plants located in Coffeyville, Kansas (Coffeyville Resources - August 2007) and Kennewick, Washington (Agrium - July 2008). (e.g. Agrium-Kennewick, Washington and Coffeyville Resources – Coffeyville, Kansas).

Additionally, PPCC proposes secondary NO_x limits of 600 lb/day, 450 lb/day, and 1,050 lb/day of 100% acid produced for Nitric Acid Plants #1, #3, and #4, respectively, to prevent negative impacts from short term emissions. Compliance will be demonstrated on a rolling 7-day average basis. PPCC's proposed approach to demonstrate short term compliance is also consistent with the aforementioned PSD permits issued in Washington and Kansas.

Nitric Acid Preheaters #1, #3, and #4 - Carbon Monoxide (CO)

Step 1: Identify All Control Technologies.

There were no entries for CO emissions from nitric acid plant preheaters in the database. However, because the CO emissions from Nitric Acid Preheaters #1, #3, and #4 at PPCC are due to natural gas combustion, a more appropriate RBLC search for CO emissions would be for natural gas combustion. Therefore, a search of the RBLC was conducted to identify control technologies for the control of CO emissions from natural gas-fired boilers. Due to the magnitude and similarity of results returned for this type of source, a search was only conducted from January 2002 to present. The following table summarizes the results of the search.

Control Equipment	Number of Facilities
No Controls Listed	53

Also, see the tabulated list of facilities above titled "Natural Gas Combustion Equipment (Boilers/Pre-Heaters/Reformer) – CO"

Step 2: Eliminate Technically Infeasible Options.

None

Step 3: Rank Remaining Control Technologies by Control Effectiveness.

No control technologies were listed for the control of CO emissions at natural gas-fired boilers.

Step 4: Evaluate Most Effective Controls and Document Results.

No Control or Good Combustion or Boiler Design: All entries in the RBLC specified no control or good combustion practices as meeting the BACT requirement for the control of CO emissions from natural gas-fired boilers.

Step 5: Select BACT.

Based on the analysis provided above, no controls with good combustion practice at an emission rate of 0.083 lb/MMBtu is selected as BACT to control the emissions of CO from the natural gas-fired preheaters at PPCC.

Nitric Acid Preheaters #1, #3, and #4 - Nitrogen Oxides (NO_x)

Step 1: Identify All Control Technologies.

There were no entries for NO_x emissions from nitric acid plant preheaters in the database. However, because the NO_x emissions from Nitric Acid Preheaters #1, #3, and #4 at PPCC are due to natural gas combustion, a more appropriate RBLC search for NO_x emissions would be for natural gas combustion. Therefore, a search of the RBLC was conducted to identify control technologies for the control of CO emissions from natural gas-fired boilers. Due to the magnitude and similarity of results returned for this type of source, a search was only conducted from January 2002 to present. The following table summarizes the results of the search.

Control Equipment	Number of Facilities
No Controls Listed	4
Low NO _x Burners	56

Also, see the tabulated list of facilities above titled “Natural Gas Combustion Equipment (Boilers/Pre-Heaters/Reformer) – NO_x”

Step 2: Eliminate Technically Infeasible Options.

None

Step 3: Rank Remaining Control Technologies by Control Effectiveness.

Only low NO_x technology was listed for the control of NO_x emissions from natural gas-fired boilers.

Step 4: Evaluate Most Effective Controls and Document Results.

No Control or Good Combustion or Boiler Design: All but 4 entries in the RBLC specified low NO_x burners as meeting the BACT requirement for the control of NO_x emissions from natural gas-fired boilers.

Step 5: Select BACT.

Based on the analysis provided above, low NO_x burners in combination with good combustion practices at an emission rate of 0.049 lb/MMBtu is selected as BACT to control the emissions of NO_x from the natural gas-fired preheaters at PPCC.

Carbon Dioxide Vent - Carbon Monoxide (CO)

Step 1: Identify All Control Technologies.

A search of the RBLC was conducted to identify technologies for the control of CO emissions from carbon dioxide plants and/or vents. There were no entries for emissions from carbon dioxide plants/vents in the database.

Step 2: Eliminate Technically Infeasible Options.

None

Step 3: Rank Remaining Control Technologies by Control Effectiveness.

No control technologies were listed for the control of CO emissions at carbon dioxide plants/vents.

Step 4: Evaluate Most Effective Controls and Document Results.

No control technologies were listed for the control of CO emissions at carbon dioxide plants/vents.

Step 5: Select BACT.

Based on the low rate of emissions and the periodic nature of the carbon dioxide vent, “good operation” and an emission rate of 3.65 lbs/hr is selected as BACT to control emissions of CO contained in the carbon dioxide stream. In addition to good operation, PPCC will take the actions necessary to minimize emissions within the BACT limit during venting to the atmosphere, including minimizing the startup time to begin normal operation and reducing throughput. The applicant has described “Good operation” as a combination of operating conditions when the plant’s refrigeration system is working properly for cooling and condensing CO₂ gas to CO₂ liquid. During startup of the plant, it takes approximately 30 minutes to reach the refrigeration set point needed for proper operation, during which time the inert vent (EUG 501) opens to allow the system to pressure down. The emission rate for CO of 3.65 lbs/hr meets the NAAQS based on air dispersion modeling and is therefore acceptable as BACT for the Carbon Dioxide Vent.

Ammonium Nitrate Plants #1 and #2 - Particulate Matter (PM/PM₁₀)

Step 1: Identify All Control Technologies.

A search of the RBLC was conducted to identify technologies for the control of PM/PM₁₀ emissions from ammonium nitrate plants. The following table summarizes the results of the search.

Control Equipment	Number of Facilities
Wet Scrubber	3
Wet Scrubber with Mist Eliminator	2

Step 2: Eliminate Technically Infeasible Options.

Each of the options listed above are technically feasible.

Step 3: Rank Remaining Control Technologies by Control Effectiveness.

Filter/Mist Eliminator: A filter/mist eliminator system is designed to remove moisture from the exit gas stream, which then passes through filter(s) to control the entrained particulate matter. According to entries in the RBLC, a mist eliminator, when combined with a scrubber, is the most effective control device. A representative production based particulate emission factor for filter/mist eliminator system(s) is 0.026 lb/ton AN.

Scrubber: A scrubber is a device that collects particles by saturating the dirty gas stream with liquid drops. The liquid drops separate the flow of the particle-laden gas. The fine particles adhere to the liquid drops when contacted. The liquid drops allow collection of smaller particles (0.5 microns). The efficiency of this control device typically ranges from 80% to 95%. All five of the emission sources identified in the RBLC utilize a wet scrubber either alone or in conjunction with a mist eliminator. Emissions guidance specific to agricultural fertilizer manufacturing provides a range for controlled air emissions from ammonium nitrate neutralizers of 0.004 to 0.44 lb of particulate matter per ton of AN solution.

Step 4: Evaluate Most Effective Controls and Document Results.

Based on the RBLC search and industry guidance, a scrubber combined with a mist eliminator is the most effective control device followed by a scrubber and condenser.

PPCC's evaluation illustrates that if it were to install a mist eliminator system on each of the two AN plants, the result would be an additional reduction in emissions of approximately 39 tpy (when compared to the proposed combined emission rate for both of the AN plants of 45 tpy). To determine the economic feasibility of a change in control technology, a cost estimate was obtained of approximately \$2 million for a Brinks Mist Eliminator System. The following table summarizes the cost associated with installing two filter/mist eliminator systems at PPCC based on the minimum capital cost of \$2 million spread over a 10 year period at 8% interest with a 10% annual operating cost:

Control Technology	Emissions Reduction (ton/yr)	Cost Impacts			
		Installation Capital Cost	Annualized Capital Cost	Annual Operating Cost	Cost Effectiveness (\$/ton)
Filter/Mist Eliminator	39	\$2,000,000 x 2	\$298,000* x 2	\$170,000 x 2	\$24,000**

* - Annualized Capital Cost = $(\$2,000,000)(A/P_{8\%, 10i})$ where $(A/P_{8\%, 10})$ is 0.149

** - Cost Effectiveness = $((\$298,000 + \$170,000) \times 2) / 39 \text{ ton/yr}$

As demonstrated in the above table, it is cost prohibitive for PPCC to install a filter/mist eliminator system to achieve the additional reduction in particulate emissions. For the same reason, PPCC eliminated the installation of a scrubber system.

Step 5: Select BACT.

PPCC will control PM/PM_{10} emissions through the use of in-stack condensers, which project to condense a minimum of 80% of the steam produced in the neutralizer. This efficiency was carried over from the Wil-Gro permit. BACT for PM/PM_{10} at Ammonium Nitrate Plants #1 and #2 is selected as in-stack condensers at an emission rate of 0.217 lb of PM/ton of AN produced. This value falls in the middle of the range provided in the guidance for fertilizer manufacturing.

Granulator System - Particulate Matter (PM/PM_{10})

Step 1: Identify All Control Technologies.

A search of the RBLC was conducted to identify technologies for the control of PM/PM_{10} emissions from granulator systems. There were two entries for emissions from granulators in the database. The following tables summarize the results of the search.

Control Equipment	Number of Facilities
Wet Scrubber	1
Fabric Filter	1

Granulator System -- PM/PM_{10}

RBLC ID	Facility Name	Control Technology
LA-0098	CF Industries, Inc.	Wet Scrubber
UT-0063	Nucor Steel Corporation - Utah	Fabric Filter

In one case, a wet scrubber was utilized to reduce the particulate matter emissions at granulator systems. The other case identified utilized a fabric filter, yet the gas stream from the granulator system was combined with other streams before being sent to the fabric filter. Additional particulate matter emission control devices used in industrial processes include electrostatic precipitators (ESP) and mechanical collectors.

Step 2: Eliminate Technically Infeasible Options.

Baghouse: A baghouse collects particles by filtering air through a fabric filter media, typically configured in long, vertically-suspended sock-like configurations (bags). During operation, particles form a filter cake that builds up and is subsequently removed by shaking the bags. A baghouse will typically provide control efficiencies in the range of 95% to 99%. For the Pan Granulator process at PPCC, the air that passes through the fabric filter has a high moisture content, which would cause the dust entrained by the fabric filter to become sticky and would make removing the filter cake very difficult, resulting in additional maintenance/replacement costs of the filter bags at the three emission points. Therefore, baghouses are eliminated from consideration as BACT for the granulator system.

Electrostatic Precipitator (ESP): An ESP removes solid particles from an air stream by imparting an electrical charge to the particles, which then passes them through a force field that causes them to migrate to an oppositely charged plate, where they are then collected. An ESP will typically provide a control efficiency of approximately 95%. An ESP would experience the same complications due to the moisture-laden gas as a fabric filter. Handling the accumulation of the wet particles on the ESP plates would create unnecessary maintenance issues. Therefore, ESPs are eliminated from consideration as BACT for the granulator system.

Scrubber: A wet scrubber is a device that collects solid particles by saturating the dirty gas stream with liquid drops. The fine particles adhere to the liquid drops when contacted, allowing collection of smaller particles. The efficiency of this control device typically ranges from 80% to 95%. This is the typical method of controlling particulate matter emissions from granulator systems.

Mechanical Collector (Cyclone/Multicyclone): A multi-cyclone places a large number of small cyclones in parallel. Cyclone separators, whether installed individually or in parallel, are particulate control devices that remove solids from the air stream by centrifugal force. The solid particles are removed from the gas stream by centrifugal force, which drives them to the wall of the collector before the gas exits the cyclone. The solids are then settled by gravity to the bottom of the control device, where they can be discharged. The efficiency of these control devices depend on various factors including particle size and specific gravity. A mechanical collector can experience the same difficulties that a fabric filter does because the solid particles need to fall to the bottom of the device. The high moisture level of the particles would cause them to build up on the walls and result in increased maintenance issues and possibly plugging. Therefore, it is eliminated from consideration.

Step 3: Rank Remaining Control Technologies by Control Effectiveness.

A wet scrubber is the most effective and feasible option for the control of PM/PM₁₀ at the granulator system.

Step 4: Evaluate Most Effective Controls and Document Results.

PPCC has elected to utilize wet scrubbers to control PM/PM₁₀ at the granulator system.

Step 5: Select BACT.

Based on the feasibility and effectiveness of scrubbers for use in controlling particulate matter, the Pryor Plant will utilize scrubbers to reduce the particulate matter exiting the granulator. BACT is selected as scrubbers with an emission limit of 2.1 lb/hr PM₁₀ for each scrubber.

Boilers #1 and #2 - Carbon Monoxide (CO)

Step 1: Identify All Control Technologies.

A search of the RBLC was conducted to identify technologies for the control of CO emissions and emission rates from natural gas-fired boilers. Due to the magnitude and similarity of results returned for this type of source, a search was only conducted from January 2002 to present. The following table summarizes the results of the search.

Control Equipment	Number of Facilities
No Controls Listed	54

Also, see the tabulated list of facilities above titled “Natural Gas Combustion Equipment (Boilers/Pre-Heaters/Reformer) – CO”

Step 2: Eliminate Technically Infeasible Options.

None

Step 3: Rank Remaining Control Technologies by Control Effectiveness.

No control technologies were listed for the control of CO emissions from natural gas-fired boilers.

Step 4: Evaluate Most Effective Controls and Document Results.

No Control or Good Combustion or Boiler Design: All entries in the RBLC specified no control or good combustion practices as meeting the BACT requirement for the control of CO emissions from natural gas-fired boilers. The emission factor of 0.083 lb/MMBtu used for the boilers at PPCC is similar to those found at a majority of the facilities listed in the RBLC.

Step 5: Select BACT.

Good combustion and an emission rate not exceeding 0.083 lb/MMBtu is selected as BACT for CO emissions from Boilers #1 and #2.

#1 and #2 Boilers - Nitrogen Oxides (NO_x)

Step 1: Identify All Control Technologies.

A search of the RBLC was conducted to identify technologies for the control of NO_x emissions and emission rates from natural gas-fired boilers. Due to the magnitude and similarity of results returned for this type of source, a search was only conducted from January 2002 to present. The following table summarizes the results of the search.

Control Equipment	Number of Facilities
No Controls Listed	4
Low NO _x Burners	56

Also, see the tabulated list of facilities above titled “Natural Gas Combustion Equipment (Boilers/Pre-Heaters/Reformer) – NO_x”

Step 2: Eliminate Technically Infeasible Options.

None

Step 3: Rank Remaining Control Technologies by Control Effectiveness.

Only low NO_x technology was listed for the control of NO_x emissions from natural gas-fired boilers.

Step 4: Evaluate Most Effective Controls and Document Results.

No Control or Good Combustion or Boiler Design: All but 4 entries in the RBLC specified low NO_x burners as meeting the BACT requirement for the control of NO_x emissions from natural gas-fired boilers. The emission factor of 0.049 lb/MMBtu used for the boilers at PPCC is similar to those found at a majority of the facilities listed in the RBLC.

Step 5: Select BACT.

Low NO_x burners in combination with good combustion practices at an emission rate of 0.049 lb/MMBtu is selected as BACT for NO_x emissions from Boilers #1 and #2.

Cooling Towers #1 and #2 - Particulate Matter (PM/PM₁₀)

Step 1: Identify All Control Technologies.

A search of the RBLC was conducted to identify technologies for the control of PM/PM₁₀

emissions and emission rates from cooling towers. Due to the magnitude and similarity of results returned for this type of source, a search was only conducted from January 2004 to present. The following tables summarize the results of the search.

Control Equipment	Number of Facilities
No Controls Listed	9
Drift Eliminators	27

Cooling Towers -- PM/PM₁₀

RBLC ID	Facility Name	Control Technology
LA-0213	Valero – New Orleans	No Control
IA-0082	Golden Grain Energy	No Control
TX-0507	NRG Texas	No Control
NC-0101	Forsyth Energy	No Control
IN-0119	Auburn Nugget	No Control
NY-0093	Trigen-Nassau Energy	No Control
TX-0481	Air Products LP – Baytown	No Control (2)
LA-0192	Crescent City Power	No Control (1)/Drift Eliminator (1)
ND-0024	Great River Energy	Drift Eliminator
IA-0089	Homeland Energy	Drift Eliminator
IA-0088	Archer Daniels	Drift Eliminator
LA-0211	Marathon Petroleum	Drift Eliminator
OH-0308	Sonoco Petroleum	Drift Eliminator
OH-0303	Asalliance Biofuels	Drift Eliminator
WV-0024	Western Greenbrier	Drift Eliminator
LA-0202	Cleco Power	Drift Eliminator
IL-0102	Aventine Energy	Drift Eliminator
OR-0041	Diamond Wanapa Energy	Drift Eliminator
LA-0204	Shintech LLC	Drift Eliminator (4)
CO-0057	Public Service Company of Colorado	Drift Eliminator
NV-0036	Newmont Nevada Energy	Drift Eliminator
AZ-0046	Arizona Clean Fuels	Drift Eliminator
TX-0487	Rohm and Haas Chemicals, Inc.	Drift Eliminator
NE-0031	Omaha Public Power	Drift Eliminator
WA-0329	Darrington Energy LLC	Drift Eliminator
WA-0328	BP West Coast Products	Drift Eliminator
OH-0252	Duke Energy	Drift Eliminator
AZ-0047	Dome Valley Energy	Drift Eliminator
WI-0228	Wisconsin Public Service	Drift Eliminator
LA-0191	Entergy – New Orleans	Drift Eliminator
AR-0077	Steelcorr - Bluewater	Drift Eliminator

Step 2: Eliminate Technically Infeasible Options.

None

Step 3: Rank Remaining Control Technologies by Control Effectiveness.

The use of drift eliminators is the most effective type of control technology followed by no control.

Step 4: Evaluate Most Effective Controls and Document Results.

Drift Eliminators: A majority of RBLC entries for particulate matter controls for cooling towers listed drift eliminators as the control device. Particulate matter becomes entrained in the liquid droplets, or drift loss, that exits the cooling tower. To reduce the drift from cooling towers, drift eliminators are usually incorporated into the tower design to remove as many droplets as practical from the air stream before exiting the tower. The drift eliminators used in cooling towers rely on inertial separation caused by direction changes while passing through the eliminators. The predominant emission factors for drift loss at cooling towers with drift eliminators ranged from 0.008% to 0.0005% of circulating flow.

No control: A small number of RBLC entries did not list any control technology as BACT at the cooling towers. When provided, the predominant emission factor for drift loss at cooling towers with no control was approximately 0.005% of circulating flow.

Step 5: Select BACT.

The use of drift eliminators is selected as BACT to control the emissions of PM/PM₁₀ from the cooling towers at PPCC. PPCC plans on improving the drift elimination system on Cooling Tower #1, which is the older of the two units. Improvement of the drift elimination system brings the reduction of particulate matter emissions in line with the BACT level control found in the RBLC. Cooling Tower #2 will meet the BACT limits with the existing drift elimination controls. The BACT PM/PM₁₀ emissions limits are 1.18 lb/hr for Cooling Tower # 1 and 1.92 lbs/hr for Cooling Tower # 2.

B. Modeling Summary

i. Air Quality Impacts

Prevention of Significant Deterioration (PSD) is a construction permitting program designed to ensure air quality does not degrade beyond the National Ambient Air Quality Standards (NAAQS) or beyond specified incremental amounts above a prescribed baseline level. The PSD rules set forth a review procedure to determine whether a source will cause or contribute to a violation of the NAAQS or maximum increment consumption levels. If a source has the potential to emit a pollutant above the PSD significance levels, then it triggers this review process.

EPA has provided significance impact levels (SIL) for the PSD review process to determine whether a source will cause or contribute to a violation of the NAAQS or consume increment.

Air quality impact analyses were conducted for NO_x, CO, and PM₁₀ to determine if ambient impacts would be above the SIL and monitoring significance levels (MSL). For NO_x, the total NO_x emissions were modeled and then the maximum predicted impacts were converted to NO₂ using the Ambient Ratio Method (ARM) for comparison to the SIL and MSL. If impacts are above the SIL, a radius of impact (ROI) is defined for the facility for each pollutant, out to the farthest receptor at or above the SIL, and a full impact analysis is required for that pollutant. The SIL is a de minimis determination. The ROI is only defined where the impacts exceed the SIL. If the air quality analysis does not indicate a ROI, no further air quality analysis is required.

The ROI is used to determine the distance out to which nearby sources need to be reviewed for inclusion in the NAAQS and increment modeling. The nearby source inventories for each pollutant that exceeded the SIL were obtained from the AQD using the determined ROI. Inventory sources included in the full impact analysis are generally sources that are within the ROI plus 50 km.

AERMOD (07026) was used for the modeling analyses. AERMOD is a refined, steady-state, multiple source, Gaussian dispersion model and is the preferred model for these analyses. The modeling analysis was performed using the regulatory default models settings, which include stack heights adjusted for stack-tip downwash and missing data processing.

Source and building elevations were obtained from engineering elevation drawings. Receptor terrain elevations entered into the model were the highest elevations extracted from USGS 7.5 minute digital elevation model (DEM) data of the area surrounding the proposed site. For each receptor elevation, the maximum terrain elevation associated with the four DEM points surrounding the receptor were selected.

To account for building wake effects, direction-specific building dimensions used as input to the model were calculated using the algorithms of the Building Profile Input Program (BPIP). BPIP is designed to incorporate the concepts and procedures expressed in the GEP Technical Support document, and the Building Downwash Guidance document, while incorporating the enhancements to improve prediction of ambient impacts in building cavities and wake regions.

As described in the *Air Dispersion Modeling Guidelines for Oklahoma Air Quality Permits*, meteorological data was derived from Oklahoma Mesonet surface data, National Climatic Data Center (NCDC) Integrated Surface Hourly (ISH) data, and FSL/NCDC Radiosonde upper air data. Oklahoma Mesonet data was provided to the AQD courtesy of the Oklahoma Mesonet, a cooperative venture between Oklahoma State University and The University of Oklahoma and supported by the taxpayers of Oklahoma. The model runs were performed using 2001-2005 meteorological data using National Weather Service surface observations from Tulsa, upper air measurements from Springfield, Missouri, and adjusting the surface data using the Oklahoma Mesonet data from Pryor, OK. The 2001-05 data set used in this analysis was provided by the AQD.

ii. Significance Analyses

A summary of results from the significance analysis is shown below. For the PM₁₀ 24-hour

standard, the impacts were determined using the highest sixth highest overall five years of meteorological data.

Class II Area Significance Analysis Results

Pollutant	Averaging Period	SIL ($\mu\text{g}/\text{m}^3$)	Max Impact ($\mu\text{g}/\text{m}^3$)	Full Impact Analysis Required?
NO ₂	Annual	1	10.0	Yes
CO	1-hr	2,000	514.4	No
	8-hr	500	146.3	No
PM ₁₀	24-hr	5	28.6	Yes
	Annual	1	5.3	Yes

As seen above, NO₂ (annual) and PM₁₀ (annual & 24-hr) exceeded their respective SIL and required a full impact analysis. The modeling results were then compared to the Class I area SIL. This comparison was done to determine if a Class I Increment Analysis is required. If the Class I SIL were not exceeded within the modeling domain, then a Class I Area Increment analysis is not required.

Class I Area Significance Analysis Results

Pollutant	Averaging Period	SIL ($\mu\text{g}/\text{m}^3$)	Distance (km)	Full Impact Analysis Required?
NO ₂	Annual	0.1	9.4	No
PM ₁₀	24-hr	0.3	18.6	No
	Annual	0.2	1.8	No

The modeling results were then compared to the MSL. If the impacts from the proposed project exceed the MSL, then the facility might be required to do pre-construction monitoring.

Monitoring Significance Level Comparison

Pollutant	Averaging Period	MSL ($\mu\text{g}/\text{m}^3$)	Max Impact ($\mu\text{g}/\text{m}^3$)
NO ₂	Annual	14	10.0
CO	8-hr	575	146.3
PM ₁₀	24-hr	10	28.6
VOC/Ozone	8-hr	100 TPY	52 TPY

The PM₁₀ impacts exceed the MSL. However, since there is an existing monitoring site located approximately 2.3 km ESE of the facility (within 10 km of the proposed sources), the existing monitoring is representative of the background concentrations and no pre-construction monitoring is required of PPCC.

iii. NAAQS Analysis

The significance analysis results indicated that the furthest significance receptor for either NO_x or PM₁₀ was located approximately 4 km from PPCC, resulting in an ROI of 54 kilometers. The

inventory source data provided by the AQD included review of major sources located 65 km from the plant, and minor sources within 10km. To complete the NAAQS Analysis, the proposed emissions from the facility were modeled simultaneously with the emissions from the NAAQS sources identified in the inventory provided by the AQD. A full list of the sources used in the modeling was provided in the application. Permit allowable emission rates were modeled for all short-term averaging periods. For annual averaging periods, the potential emissions were multiplied by an operating factor, which was based on the past actual 2-year average of operating hours reported in the emission inventory data. Monitoring data from the state's network of ambient monitors was utilized to develop background concentrations for use in the NAAQS analysis. The Mayes County monitors were used as the most representative monitoring data and are approximately 2.3 km ESE of the facility.

NAAQS Background Concentrations

Pollutant	Averaging Period	Concentrations		Monitor Site ID	Year
		ppm	µg/m ³		
NO ₂	Annual	0.004	8	400979014	2007
PM ₁₀	24- hr ¹	----	58	400979014	2005-7
PM ₁₀	Annual ²	----		400979014	2005-7

¹ – The highest fourth highest concentration over the most recent three years of monitoring data.

² – The average of the most recent three years of monitoring data.

The background concentrations were added to the modeled concentration for comparison with the NAAQS. The results of the NAAQS analysis, after accounting for the ARM and including background concentrations, are summarized in the following table.

NAAQS Analyses Results

Pollutant	Averaging Period	Impact (µg/m ³)	Background (µg/m ³)	Total (µg/m ³)	NAAQS (µg/m ³)
NO ₂	Annual	22	8	30	100
PM ₁₀	24- hr ¹	93	58	151	150
PM ₁₀	Annual ²	28	19	47	50

¹ – The highest sixth highest concentration over the five years of met data.

² – The five year average over the five years of met data.

As indicated in the table above, modeling results predict an exceedance of the PM₁₀ NAAQS. As described in the NSR/PSD Workshop Manual, when an exceedance is predicted at one or more receptors in the impact area, the applicant must:

“[...] determine if the net emissions increase from the proposed source will result in a significant ambient impact at the point (receptor) of the predicted violation, and at the time the violation is predicted to occur. The source will not be considered to cause or contribute to the violation if its own impact is not significant at any violating receptor

at the time of each predicted violation.”

The modeling results were reviewed to determine if the emissions from the PPCC facility had a significant impact at the specific receptor when the modeled exceedance occurred. The impacts of the PM₁₀ emissions from PPCC were less than 5 µg/m³ at the specific receptors when the modeled exceedance occurred. Therefore, the emissions from PPCC do not cause or contribute to the modeled PM₁₀ NAAQS violation.

iv. PSD Increment Analysis

The PSD increment is the maximum allowable increase in concentration that is allowed to occur above a baseline concentration for a pollutant. The major source baseline date depends upon the county in which the facility is located and on the pollutant in question. Sources that contribute to emissions increases after the baseline date were obtained from the AQD, and the increment consuming emissions from the facility were modeled simultaneously with the PSD Increment inventory sources provided by the AQD. As with the NAAQS analysis, permit allowable emission rates were modeled for all short-term averaging periods. For annual averaging periods, the potential emissions were multiplied by an operating factor, which was based on the past actual 2-year average of operating hours reported in the emission inventory data.

Class II PSD Increment Analyses Results

Pollutant	Averaging Period	Impact (µg/m³)	Allowable (µg/m³)
NO ₂	Annual	17	25
PM ₁₀	24- hr ¹	380	30
PM ₁₀	Annual	13	17

¹ – The highest second highest concentration.

The 24-hour PM₁₀ increment modeling results were reviewed to determine if the emissions from PPCC had a significant impact at the specific receptor when the modeled exceedance occurred. The impacts of the PM₁₀ emissions from PPCC were less than 5 µg/m³ at the specific receptors when the modeled exceedance occurred. Therefore, the emissions from PPCC do not cause or contribute to the modeled PM₁₀ Increment violation.

v. Evaluation of Source-Related Impacts on Growth, Soils, Vegetation, Visibility

a. Class I Area Visibility Analysis

The Class I areas nearest to PPCC are the Caney Creek Wilderness in western-central Arkansas, the Hercules Glades Wilderness in southwestern Missouri, and Upper Buffalo Wilderness located in north-central Arkansas. The FLM have proposed new guidance that uses the 10D Rule ($Q/D < 10$). In this equation, Q is equal to the sum of the emission increases of NO_x, SO₂, and PM₁₀ that will result from the proposed project (in TPY). The variable D is the distance from the source to the Class I Area (in km), and must be greater than 50 km. If the calculated Q/D value exceeds 10, then a Class I area analysis evaluating Air Quality Related Values (AQRV) (deposition and visibility) must be conducted. Otherwise, no additional analyses are

required. As shown below, since the Q/D values are less than 10, no AQRV analyses need to be conducted.

10D Rule Screening Analysis

Class I Area	Distance (km)	Emissions (TPY)	Q/D
Caney Creek	229	474	2.1
Hercules Glade	210	474	2.3
Upper Buffalo	170	474	2.8

b. Class II Area Visibility Analysis

A screening analysis was conducted in order to evaluate PPCC's impact on Class II visibility. VISCREEN, the screening tool recommended for Class I visibility screening analyses, was used per guidance provided by the AQD. In the absence of any guidance on the topic of Class II visibility screening analysis, default values and screening parameters for Class I visibility screening were used as recommended by the U.S. EPA.

VISCREEN allows for two levels of visibility impact screening. Level 1 screening involves a series of conservative calculations designed to identify those emissions sources that have little potential for adversely affecting visibility. If visibility impairments are indicated, a Level 2 analysis, which allows for modification of default parameters including meteorological data, is performed.

The default meteorological conditions of F-stability and 1 m/s wind speed were used. For emission rates, only annual emissions of NO₂ and PM₁₀ were input into the model. The default values were chosen for primary NO₂, soot, and primary sulfate emissions. A background visual range of 40 km was used. This is based on the Workbook for Plume Visual Impact Screening Analysis EPA_454/R-92-023 Figure 9. Based on a geographic analysis of the local area, the closest large population center (Pryor, OK), is located 10 km from PPCC. This distance was used for the source-observer input distance.

VISCREEN analyzes a matrix of conditions for regions within and outside the Class I area boundaries (in this case, the "Class II" boundaries). This matrix includes forward scattering and backward scattering impacts viewed against the sky and the surrounding terrain (e.g., mountains, hills, etc.). The forward scattering case assumes that the sun is in front of the observer at an angle of 10° above the horizon. The backward scatter case assumes that the sun is at the observer's back at an angle of 140° above the horizon.

Results from the VISCREEN model are expressed in terms of perceptibility (ΔE) and contrast. The EPA default Class I screening criteria for perceptibility and contrast are 2.0 and 0.05, respectively. For a Class II analysis, the AQD guidance suggests that three times the screening criteria be used, resulting in perceptibility and contrast thresholds of 6.0 and 0.15.

VISCREEN Results

Background	(degrees)	Azimuth (degrees)	Dist. (km)	Alpha (degrees)	ΔE		Contrast	
					Critical	Plume	Critical	Plume
SKY	10	150	15.6	19	6.0	5.0	0.15	0.01
SKY	140	150	15.6	19	6.0	1.9	0.15	0.03
TERRAIN	10	84	10.0	84	6.0	2.1	0.15	0.02
TERRAIN	140	84	10.0	84	6.0	0.4	0.15	0.01

As seen from the VISCREEN results in the table above, the predicted impact will not result in actual visibility impairment of the surrounding area.

c. Growth Analysis

The following discussion was taken from PPCC's modeling report summary.

The purpose of the growth analysis is to predict quantitatively the amount of new growth likely to occur to support the source or modification under review and to estimate the emissions that will result from the associated growth. First, an assessment is made regarding the amount of residential growth the modified source will bring to the area. This growth depends on the size of the available work force, the number of new employees, and the availability of housing in the area. Associated commercial and industrial growth consists of new sources providing goods and services to the new employees and to the modified source itself. Once these anticipated growth effects have been considered, an estimate of the air pollutant emissions that would likely result from the associated growth is made.

The restart of PPCC will entail utilizing existing equipment that is located within the Mid-America Industrial Park. This will result in no additional construction equipment necessary and a negligible effect on the local residential growth in the area. Due to the location of the facility and the surrounding industrial park, residential areas are not concentrated and thus have no impact on air pollutant emissions in the area. Additionally, the associated truck traffic on the existing paved roads through the industrial park is already heavy. Any impact resulting from increased traffic is expected to be negligible. Thus, the anticipated industrial, commercial, and residential growth in the local area due to this project is expected to be negligible.

d. Soil and Vegetation Impacts

The following discussion was taken from PPCC's modeling report summary.

Analysis of the impact of air emissions on soils and vegetation is based on an inventory of the soils and vegetation types found in the impact area. This inventory includes all vegetation of any commercial and recreational significance. For most types of soil and vegetation, ambient concentrations of criteria pollutants below the secondary NAAQS do not result in harmful effects.

PPCC is located in an industrial park near Pryor, OK in Mayes County. Based on the United States Department of Agriculture (USDA) Soil Conservation Service general soil map for Mayes

County, the primary soil type near the facility is Taloka silt loam (71.6%). The agricultural and livestock products in Mayes County consist primarily of timber, cattle, and poultry. No sensitive aspects of the soil and vegetation in the Pryor area have been identified that would be adversely affected by the proposed restart in production at PPCC. Consequently, the secondary NAAQS, which establish the ambient concentrations levels below which no harmful effects to either soil or vegetation can be expected, are used as an indicator of potentially adverse impacts. As demonstrated in the Ambient Air Impact section, the maximum ambient air impact from the proposed modification is below the secondary NAAQS value, therefore, any impact to the soil and vegetation as a result of the proposed modification is expected to be negligible.

SECTION VII. COMPLIANCE ASSURANCE MONITORING EVALUATION

Background

Compliance Assurance Monitoring (CAM) applies to any pollutant-specific emissions unit at a major source that is required to obtain an operating permit, for any application for an initial operating permit submitted after April 18, 1998, that addresses “large emissions units,” or any application that addresses “large emissions units” as a significant modification to an operating permit, or for any application for renewal of an operating permit, if the emissions unit meets all of the following criteria.

- It is subject to an emission limit or standard for an applicable regulated air pollutant
- It uses a control device to achieve compliance with the applicable emission limit or standard
- It has potential emissions, after the control device, of the applicable regulated air pollutant of 100 TPY or 10/25 TPY of a HAP

The following table outlines the pre-control emission calculations based on the manufacturer's data. As shown below, a CAM Plan is required for each source.

EU ID#	Point ID#	Source Description	Pollutant	Uncontrolled Emissions (ton/yr)	Control Efficiency (%)	Controlled Emissions (ton/yr)	Type of Monitoring Required
3	301	Nitric Acid Plant #1	NO _x	913	90	58.2	≤ Daily
3	302	Nitric Acid Plant #3	NO _x	684	90	44.2	≤ Daily
3	303	Nitric Acid Plant #4	NO _x	3,198	95	159.9	≤ Daily
7	701	Granulator Scrubber #1	PM	193	98.5	2.9	≤ Daily
7	702	Granulator Scrubber #2	PM	193	98.5	2.9	≤ Daily
7	703	Granulator Scrubber #3	PM	193	98.5	2.9	≤ Daily

Following is an outline of PPCC's proposed Compliance Assurance Monitoring.

Nitric Acid Plant #1

A. EUG ID #3

Point ID#: 301B. Emission limit or standard:

Permit Limit: Nitrogen Oxide – 13.3 lb/hr to maintain compliance with the NAAQS.

C. Control Technology:

Extended Absorption and NSCR.

D. Monitoring Approach:

NO_x CEMS.

Nitric Acid Plant #3

A. EUG #3

Point ID#: 302

B. Emission limit or standard:

Permit Limit: Nitrogen Oxide – 10.1 lb/hr to maintain compliance with the NAAQS.

C. Control Technology:

Extended Absorption and NSCR.

D. Monitoring Approach:

NO_x CEMS.

Nitric Acid Plant #4

A. EUG #3

Point ID#: 303

B. Emission limit or standard:

Permit Limit: Nitrogen Oxide - 36.5 lb/hr to maintain compliance with the NAAQS.

C. Control Technology:

SCR.

D. Monitoring Approach:

NO_x CEMS with an indicator range of 36.5 lb/hr.

Granulator System

A. EUG #7

Point ID#: 701, 702, and 703 - Granulator Scrubbers #1, #2, and #3

B. Emission limit or standard:

Permit Limit: PM/PM₁₀ - 0.7 lb/hr per source to maintain compliance with OAC 252:100-25 and NAAQS.

C. Control Technology:

Scrubbers

D. Monitoring Approach:

Daily visual observation per EPA Method 9.

SECTION VIII. OKLAHOMA AIR POLLUTION CONTROL RULES

OAC 252:100-1 (General Provisions) [Applicable]

Subchapter 1 includes definitions but there are no regulatory requirements.

OAC 252:100-2 (Incorporation by Reference) [Applicable]

This subchapter incorporates by reference applicable provisions of Title 40 of the Code of Federal Regulations listed in OAC 252:100, Appendix Q. These requirements are addressed in the “Federal Regulations” section.

OAC 252:100-3 (Air Quality Standards and Increments) [Applicable]

Subchapter 3 enumerates the primary and secondary ambient air quality standards and the significant deterioration increments. At this time, all of Oklahoma is in “attainment” of these standards.

OAC 252:100-5 (Registration, Emissions Inventory and Annual Operating Fees) [Applicable]

Subchapter 5 requires sources of air contaminants to register with Air Quality, file emission inventories annually, and pay annual operating fees based upon total annual emissions of regulated pollutants. Required annual information (Turn-Around Document) shall be provided to Air Quality.

OAC 252:100-8 (Permits for Part 70 Sources) [Applicable]

Part 5 includes the general administrative requirements for Part 70 permits. Any planned changes in the operation of the facility that result in emissions not authorized in the permit and that exceed the “Insignificant Activities” or “Trivial Activities” thresholds require prior notification to AQD and may require a permit modification. Insignificant activities refer to those individual emission units either listed in Appendix I or whose actual calendar year emissions do not exceed the following limits.

- 5 TPY of any one criteria pollutant
- 2 TPY of any one hazardous air pollutant (HAP) or 5 TPY of multiple HAP or 20% of any threshold less than 10 TPY for a HAP that the EPA may establish by rule

Emission limitations and operational requirements necessary to assure compliance with all applicable requirements for all sources are taken from the construction permit application, or are developed from the applicable requirement.

OAC 252:100-9 (Excess Emissions Reporting Requirements) [Applicable]

In the event of any release that results in excess emissions, the owner or operator of such facility shall notify the Air Quality Division as soon as the owner or operator of the facility has knowledge of such emissions, but no later than 4:30 p.m. the next working day. Within ten (10) working days after the immediate notice is given, the owner or operator shall submit a written report describing the extent of the excess emissions and response actions taken by the facility. In addition, if the owner or operator wishes to be considered for the exemption established in 252:100-9-3.3, a Demonstration of Cause must be submitted within 30 calendar days after the occurrence has ended.

OAC 252:100-13 (Open Burning)

[Applicable]

Open burning of refuse and other combustible material is prohibited except as authorized in the specific examples and under the conditions listed in this subchapter. The Ammonia Storage Flare Pilot Flare is an insignificant activity. The flare is smokeless.

OAC 252:100-19 (Particulate Matter (PM))

[Applicable]

Section 19-4 regulates emissions of PM from new and existing fuel-burning equipment, with emission limits based on maximum design heat input rating. Fuel-burning equipment is defined in OAC 252:100-19 as any internal combustion engine or gas turbine, or other combustion device used to convert the combustion of fuel into usable energy. Table 1.4-2 lists natural gas total PM emissions to be 7.6 lbs/million scf or about 0.0076 lbs/MMBTU, which is in compliance for all fuel burning units at the facility. The following table summarizes equipment subject to this rule, the Appendix C limits, and the potential emissions. As illustrated in the table, all emission units are in compliance with this rule.

Equipment	Maximum Heat Input (MMBTUH)	Appendix C Emission Limit (lbs/MMBTU)	Potential Emission Rate (lbs/MMBTU)
Ammonia Plant #4 Primary Reformer	225	0.29	0.0076
MMBTUH Nitric Acid Preheater #1	20	0.51	0.0076
MMBTUH Nitric Acid Preheater #3	20	0.51	0.0076
MMBTUH Nitric Acid Preheater #4	20	0.51	0.0076
MMBTUH Boiler #1	80	0.37	0.0076
MMBTUH Boiler #2	80	0.37	0.0076
MMBTUH Ammonia Storage Flare Pilot	0.0152	0.6	0.0076

Section 19-12 limits particulate emissions from emission points in an industrial process based on process weight rate, as specified in Appendix G. As shown in the following table, all emission points are in compliance with Subchapter 19.

EUG	Process Rate (TPH)	Appendix G Emission Limit (lbs/hr)	PTE (lbs/hr)
Granulator Scrubber #1	16.7	27.04	2.10
Granulator Scrubber #2	16.7	27.04	2.10
Granulator Scrubber #3	16.7	27.04	2.10
Cooling Tower #1	6,130	103.54	1.18
Cooling Tower #2	10,008	111.50	1.92

OAC 252:100-25 (Visible Emissions and Particulates)

[Applicable]

No discharge of greater than 20% opacity is allowed except for short-term occurrences that consist of not more than one six-minute period in any consecutive 60 minutes, not to exceed three such periods in any consecutive 24 hours. In no case shall the average of any six-minute period exceed 60% opacity. The permit will require the use of natural gas in the fuel-burning

units and maintenance and monitoring of all other particulate-emitting units to ensure the opacity standard is met.

OAC 252:100-29 (Fugitive Dust)

[Applicable]

No person shall cause or permit the discharge of any visible fugitive dust emissions beyond the property line on which the emissions originated in such a manner as to damage or to interfere with the use of adjacent properties, or cause air quality standards to be exceeded, or to interfere with the maintenance of air quality standards. Most of the parking areas, unloading areas, and access areas are paved. Under normal operating conditions, this facility has negligible potential to violate this requirement; therefore it is not necessary to require specific precautions to be taken.

OAC 252:100-31 (Sulfur Compounds)

[Applicable]

Part 5 limits sulfur dioxide emissions from new fuel-burning equipment (constructed after July 1, 1972). For gaseous fuels the limit is 0.2 lb/MMBTU heat input averaged over 3 hours. All equipment at this facility is being treated as new for purposes of this permit evaluation. For all equipment at the facility except the primary reformer, the permit requires the use of pipeline natural gas having no more than 5 grains TRS/100 scf to ensure compliance with Subchapter 31. As discussed in the memorandum, the primary reformer burns waste gas containing waste sulfur (H_2S) from the Desulfurization Unit. Waste sulfur recovered from the Desulfurization Unit is simply the H_2S recovered from the natural gas used as a raw material in the ammonia production process. The total sulfur content burned in the reformer will be the sulfur in natural gas fuel required to supply 225 MMBTUH plus the sulfur recovered from Desulfurization Unit. Based on pipeline natural gas having no more than 5 grains TRS/100 scf at a heating value of 1,020 Btu/scf, total sulfur will average no greater than 0.6 lbs/hr (1.2 lbs/hr SO_2), which equates to 0.006 lbs- SO_2 /MMBTU and is in compliance.

OAC 252:100-33 (Nitrogen Oxides)

[Applicable]

This subchapter limits new gas-fired fuel-burning equipment with rated heat input greater than or equal to 50 MMBTUH to emissions of 0.20 lbs of NO_x per MMBTU, three-hour average. The following table summarizes equipment subject to this rule and the potential emissions expressed in units of lbs/MMBtu. As illustrated in the table, all emission units are in compliance with this rule.

Fuel-Burning Equipment Rated at \geq 50 MMBTUH	Heat Input Rating (MMBTUH)	Emission Factor (lbs/MMBtu)	Source of Emission factor
Primary Reformer	225	0.053	Manufacturer Guarantee
Boiler #1 and #2	80	0.049	AP-42; Table 1.4-1 Low NO_x burners

* Based on 50 lbs/MMscf converted to lbs/scf using a GCV for natural gas of 1,020 Btu/scf.

OAC 252:100-35 (Carbon Monoxide)

[Not Applicable]

This subchapter affects gray iron cupolas, blast furnaces, basic oxygen furnaces, petroleum catalytic cracking units, and petroleum catalytic reforming units. It requires removal of 93% or more of CO by “complete secondary combustion” from new sources and also from existing

sources located in or significantly impacting a non-attainment area for CO. There are no affected sources.

OAC 252:100-37 (Volatile Organic Compounds) [Applicable]

Part 3 requires storage tanks with a capacity of 400 gallons or more and storing a VOC with a vapor pressure greater than 1.5 psia to be equipped with a permanent submerged fill pipe or with an organic vapor recovery system. This facility has no fuel storage tanks.

Part 5 limits the VOC content of coating used in coating lines or operations. This facility will not normally conduct coating or painting operations except for routine maintenance of the facility and equipment, which is not an affected operation.

Part 7 requires fuel-burning equipment to be operated and maintained so as to minimize VOC emissions. Temperature and available air must be sufficient to provide essentially complete combustion. The following combustion equipment is subject to this rule and is designed to provide essentially complete combustion of organic materials.

EMISSION UNITS			
EU/EUG ID	Point ID	EU Name/Model	Construction Date
EUG 1		Ammonia Plant #4	
1	101	225 MMBTUH Ammonia Plant #4 Primary Reformer	1995
EUG 4		Nitric Acid Heaters	
4	401	20 MMBTUH Nitric Acid Preheater #1	1966
4	402	20 MMBTUH Nitric Acid Preheater #3	1966
4	403	20 MMBTUH Nitric Acid Preheater #4	1995
EUG 8		Boilers	
8	801	80 MMBTUH Boiler #1	1978
8	802	80 MMBTUH Boiler #2	1995
NA		Insignificant Sources	
NA	NA	0.0152 MMBTUH Ammonia Storage Flare Pilot	1996

Part 7 also regulates effluent water separators that receive water containing more than 200 gallons per day of VOC. There is no effluent water separator at this location.

OAC 252:100-40 (Control Of Emission Of Friable Asbestos) [Applicable]

This subchapter regulates the release of friable asbestos to the ambient air during demolition and renovation operations.

Section 40-5, in addition the requirements set forth for the handling of found in 40 CFR Part 61, Subpart M, contains provisions for handling, containerizing, storing, and transporting of friable asbestos during demolition or renovation operations as well as maintenance of existing asbestos. The facility is subject to this rule.

OAC 252:100-42 (Toxic Air Contaminants (TAC)) [Applicable]

This subchapter regulates toxic air contaminants (TAC) that are emitted into the ambient air in areas of concern (AOC). Any work practice, material substitution, or control equipment required by the Department prior to June 11, 2004 to control a TAC shall be retained, unless a

modification is approved by the Director. Because no AOC has been designated, there are no specific requirements for this facility at this time.

OAC 252:100-43 (Testing, Monitoring, and Recordkeeping) [Applicable]

This subchapter provides general requirements for testing, monitoring and recordkeeping and applies to any testing, monitoring or recordkeeping activity conducted at any stationary source. To determine compliance with emissions limitations or standards, the Air Quality Director may require the owner or operator of any source in the state of Oklahoma to install, maintain and operate monitoring equipment or to conduct tests, including stack tests, of the air contaminant source. All required testing must be conducted by methods approved by the Air Quality Director and under the direction of qualified personnel. A notice-of-intent to test and a testing protocol shall be submitted to Air Quality at least 30 days prior to any EPA Reference Method stack tests. Emissions and other data required to demonstrate compliance with any federal or state emission limit or standard, or any requirement set forth in a valid permit shall be recorded, maintained, and submitted as required by this subchapter, an applicable rule, or permit requirement. Data from any required testing or monitoring not conducted in accordance with the provisions of this subchapter shall be considered invalid. Nothing shall preclude the use, including the exclusive use, of any credible evidence or information relevant to whether a source would have been in compliance with applicable requirements if the appropriate performance or compliance test or procedure had been performed.

The following Oklahoma Air Pollution Control Rules are not applicable to this facility:

OAC 252:100-7	Permits for Minor Facilities	not in source category
OAC 252:100-11	Alternative Emissions Reduction	not requested
OAC 252:100-15	Mobile Sources	not in source category
OAC 252:100-17	Incinerators	not type of emission unit
OAC 252:100-23	Cotton Gins	not type of emission unit
OAC 252:100-24	PM from Grain, Feed, or Seed Operations	not in source category
OAC 252:100-39	Nonattainment Areas	not in subject area
OAC 252:100-47	Landfills	not in source category
40 CFR Part 72	Acid Rain	not in source category

SECTION IX. FEDERAL REGULATIONS

PSD, 40 CFR Part 52 [Applicable]

Rather than attempt to reconcile existing permits with changes that may result from re-starting a plant that has been inactive for ten years to evaluate where significant modifications are occurring, a decision to simplify the permitting process was made by PPCC and accepted by AQD. A full PSD (prevention of significant deterioration) analysis has been completed for this permit issuance.

NSPS, 40 CFR Part 60 [Subpart Dc and Subpart G Applicable]

Subpart Dc, Small Industrial-Commercial-Institutional Steam Generating Units, affects steam generating units constructed after June 9, 1989, and with capacity between 10 and 100 MMBTUH. Boiler #1 was constructed prior to the effective date and is not subject to Subpart Dc. Boiler #2 is

subject to the rule. Because Boiler #2 will not burn coal, oil, or wood fuels, the emissions standards of this subpart are not applicable. Only the recordkeeping and reporting requirements of 40 CFR 60.48c, as further described in 40 CFR 60.7, are applicable.

Subpart G, Standards of Performance for Nitric Acid Plants, affects any nitric acid production unit that commences construction or modification after August 17, 1971 and requires that no owner or operator shall cause to be discharged into the atmosphere from any affected facility any gases which contain nitrogen oxides, expressed as NO₂, in excess of 1.5 kg per metric ton of acid produced (3.0 lb per ton), the production being expressed as 100 percent nitric acid, and shall not exhibit 10 percent opacity, or greater. The application states that Nitric Acid Plant #1 and #3 were installed in 1966 and are not subject to Subpart G.

Plant #4 was constructed in Illinois in 1964 and relocated to the Wil-Gro facility in 1995. §60.14(e)(6) provides that the relocation or change in ownership of an existing facility is not by itself, considered a modification under this part. In an applicability determination issued by EPA on April 22, 2005 (Control No. 0700028), concerning relocation of an NSPS boiler constructed (manufactured) prior to the effective date and relocated after the effective date, EPA states “EPA agrees with the findings of ADEC, that Trident's Boiler #6 is not subject to Subpart Dc, provided that Trident's statements that the boiler has not been rebuilt, reconstructed, or modified since its original installation are accurate. If it is found that any modifications to Boiler # 6 are or have been made, that will invalidate this determination.” Therefore, provided Nitric Acid Plant #4 was not rebuilt, reconstructed, or modified since its original installation date, it also will not be subject to Subpart G.

Subparts K, Ka, Kb, Petroleum Liquids and VOL Storage Vessels. The tanks at this facility are less than the storage capacity thresholds for these subparts and therefore are not affected facilities.

Subpart VV, Equipment Leaks of VOC in the Synthetic Organic Chemical Manufacturing Industry. The equipment is not in a SOCOMI plant.

NESHAP, 40 CFR Part 61

[Applicable]

Subpart M, National Emission Standard for Asbestos, The provisions of this subpart are applicable to those sources specified in §§61.142 through 61.151, 61.154, and 61.155. Specifically, §61.145, Standard for Demolition and Renovation, affects facilities where demolition or renovation occurs in the presence of asbestos. The facility has been in compliance with this rule to date.

NESHAP, 40 CFR Part 63

[Not Applicable]

Section 63.43 of Subpart B requires that any facility not included in a listed source category (or for which a standard has not been promulgated under Section 112c of the CAA prior to May 15, 2002) that constructs or reconstructs a major source of HAP after June 29, 1998, is subject to a case-by-case MACT determination. This “112g” MACT determination may be superseded by any subsequently promulgated MACT requirement promulgated under Section 112c of the CAA. This facility is not a major source of HAP. As stated earlier in this memorandum, the permittee will take an enforceable limit to maintain its status as a minor source of HAP emissions. Emissions and continued compliance will be verified with initial stack testing and parametric monitoring, respectively.

Subpart Q, National Emission Standards for Hazardous Air Pollutants for Industrial Process Cooling Towers, applies to all new and existing industrial process cooling towers that are operated with chromium-based water treatment chemicals and are either major sources or are integral parts of facilities that are major sources as defined in §63.401. The cooling towers will not use any chromium-based water treatment chemicals and will therefore not be subject to the requirements of this subpart.

Subpart FFFF (Miscellaneous Organic Chemical Manufacturing [MON]) affects miscellaneous organic chemical process manufacturing units (MCPU) that are major or are located at major sources, as major is defined in 40 CFR 63.2 and that satisfy each of three criteria: 1) The MCPU must manufacture certain organic chemicals as identified by a number of sub-criteria; 2) The MCPU processes, uses, or generates any of the organic HAP listed in section 112(b) of the CAA or hydrogen halide and halogen HAP, as defined in §63.2550; and 3) The MCPU may not be subject to any other MACT, except for process vents from batch operations within a chemical manufacturing process unit (CMPU), as identified §63.100(j)(4) in Subpart I.

This facility has a urea manufacturing plant, satisfying the first criterion. Urea ($\text{CO}(\text{NH}_2)_2$) is produced by combining ammonia (NH_3) with carbon dioxide (CO_2), but the urea plant itself does not process, use, or generate any of the organic HAPs listed in section 112(b). Production of urea requires ammonia, and the facility has an ammonia plant that provides ammonia. As discussed in the Process Description, ammonia production results in emissions of methanol, a 112(b)-listed organic HAP. However, on-site production of ammonia is not necessary to the manufacture of urea, so the ammonia production equipment is not considered to be part of “all equipment which collectively function to produce a product or isolated intermediate that are materials described in §63.2435(b)” as a MCPU, as defined in §63.2550. That definition also states that ancillary activities are not considered a process or part of any process. Criteria one and criteria two are not satisfied, therefore the urea plant is not subject to MON.

The ammonia plant meets criteria 2) and 3), but not 1) and is therefore not subject. Additionally, there are no other emissions units at the facility subject to this rule.

Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial and Institutional Boilers and Process Heaters. In March, 2007, the EPA filed a motion to vacate and remand this rule back to the agency. The rule was vacated by court order, subject to appeal, on June 8, 2007. No appeals were made, and the rule was vacated on July 30, 2007. Existing and new small gaseous fuel boilers and process heaters (less than 10 MMBtu/hr heat rating) were not subject to any standards, recordkeeping, or notifications under Subpart DDDDD. EPA is planning on issuing guidance (or a rule) on what actions applicants and permitting authorities should take regarding MACT determinations under either Section 112(g) or Section 112(j) for sources that were affected sources under Subpart DDDDD and other vacated MACTs. It is expected that the guidance (or rule) will establish a new timeline for submission of section 112(j) applications for vacated MACT standards. At this time, AQD has determined that a 112(j) determination is not needed for sources potentially subject to a vacated MACT, including Subpart DDDDD. This permit may be reopened to address Section 112(j) when necessary.

This part applies to any pollutant-specific emissions unit at a major source that is required to obtain an operating permit, for any application for an initial operating permit submitted after April 18, 1998, that addresses “large emissions units,” or any application that addresses “large emissions units” as a significant modification to an operating permit, or for any application for renewal of an operating permit, if it meets all of the following criteria.

- It is subject to an emission limit or standard for an applicable regulated air pollutant
- It uses a control device to achieve compliance with the applicable emission limit or standard
- It has potential emissions, prior to the control device, of the applicable regulated air pollutant of 100 TPY or 10/25 TPY of a HAP

Because the application for an initial operating permit will be received on or after April 18, 1998, the “large emissions units” are subject to CAM. Other emissions units having potential emissions of 100 TPY or greater, but only prior to the control device, would be subject to this rule upon permit renewal. However, the applicant has elected to accept CAM requirements on these emissions units for this permit to establish the required monitoring criteria. The emissions units for which CAM requirements will be established are listed in the following table. These emissions units are subject to permit limit for pollutants that must be controlled to maintain compliance with the NAAQS.

EU ID#	Point ID#	Source Description	Pollutant	Uncontrolled Emissions (ton/yr)	Control Efficiency (%)	Controlled Emissions (ton/yr)
3	301	Nitric Acid Plant #1	NO _x	913	94	58.2
3	302	Nitric Acid Plant #3	NO _x	684	94	44.2
3	303	Nitric Acid Plant #4	NO _x	3,198	95	159.9
7	701	Granulator Scrubber #1	PM	193	98.5	2.9
7	702	Granulator Scrubber #2	PM	193	98.5	2.9
7	703	Granulator Scrubber #3	PM	193	98.5	2.9

Monitoring of NO_x per the standards of NSPS Subpart G is considered presumptively acceptable monitoring for Nitric Acid Plants #1, #3, and #4, Point ID #301, #302, and #303, respectively, in accordance with 40 CFR 64.4(b)(4). The required explanation of the applicability is in the applicability discussion for NSPS Subpart G.

Chemical Accident Prevention Provisions, 40 CFR Part 68 [Applicable]
 This facility will not process or store more than the threshold quantity of any regulated substance (Section 112r of the Clean Air Act 1990 Amendments). The facility has one 396,800 gallon nitric acid storage tank, five 78,800 gallon ammonia storage tanks, and one 5,640,000 gallon ammonia storage tank. The ammonia tanks will be subject to this rule, and the facility will be required to have a risk management plan before storing the ammonia. More information on this federal program is available on the web page: www.epa.gov/ceppo.

Acid Rain, 40 CFR Part 72 (Permit Requirements) [Not Applicable]
 This facility is not an affected source.

Stratospheric Ozone Protection, 40 CFR 82

[Not Applicable]

These standards require phase out of Class I & II substances and reductions of emissions of Class I & II substances to the lowest achievable level. This facility does not utilize any Class I & II substances.

SECTION X. COMPLIANCE

Inspection

On July 22, 2008, David Pollard inspected the facility accompanied by Mr. John Carver of LSB Industries and Kale Hanner and Ken Green of HSG Environmental Consultants. The facility was not in operation, but appeared to have been constructed as represented in the application. Because the facility is not yet in operation, there were no records to inspect.

Tier Classification and Public Review

This application has been determined to be a Tier III based on the request for a construction permit for a new non-listed major stationary source, which has the potential to emit 250 tons per year or more of any pollutant subject to regulation.

PPCC published a "Notice of Filing a Tier III Application" in *The Pryor Daily Times*, a daily newspaper published in the city of Pryor, Mayes County, on August 19, 20, and 21, 2008. The notice stated that the application was available for public review at the Pryor Plant Chemical Company office located at 4463 Hunt Street, Pryor, Oklahoma, or at the DEQ Air Quality Division's main office in Oklahoma City, and that a draft of this permit would be made available for public review for a period of 30 days as stated in a newspaper announcement. It also stated that any person(s) may request a meeting to explain the permitting process, and that such request must be submitted to the Air Quality Division contact in writing within 30 days of the publication of the notice. No comments or request for a process meeting were received.

This "draft" permit is available for public review for a period of thirty (30) days, during which comments or a request for a public meeting may be submitted to DEQ. In lieu of waiting for a request for a meeting, the applicant may publish notice of a meeting and set the date, time, and location in the same notice for this draft permit or during the 30-day comment period provided for this draft permit.

After the public review/comment period and the public meeting, if any, the typical procedure is that DEQ prepares a response to any significant comments and either issues a final denial or prepares a "proposed" permit for EPA review, which lasts 45 days. At the beginning of the EPA review, the applicant publishes notice of DEQ's decision to issue the permit and makes the proposed permit and comments received on the draft permit, if any, available for public review for a period of twenty (20) days, with the opportunity to request an administrative hearing. If no written request for an administrative hearing is received by the Department by the end of twenty (20) days after the publication date of the notice, the "final" permit is issued.

PPCC requested concurrent public and EPA reviews, reducing total review time to 45 days instead of 75 days (30 day public review + 45 day EPA review).

PPCC published concurrently, a “Notice of Tier III Draft Permit” and “Public meeting” in *The Pryor Daily Times*, a daily newspaper published in the city of Pryor, Mayes County, on January 5, 2009. The notice stated that the draft permit was available for public review at the Pryor Plant Chemical Company office located at 4463 Hunt Street, Pryor, Oklahoma, or at the Pryor Public Library located at 505 East Graham Avenue, Pryor, Oklahoma, or at the DEQ Air Quality Division’s main office in Oklahoma City. No comments or requests for a process meeting or administrative hearing were received.

This facility is not located within 50 miles of the border of Oklahoma and any other state. PPCC has submitted an affidavit documenting that it is not seeking a permit for land use or for any operation upon land owned by others without their knowledge. The affidavit certifies that PPCC owns the real property. Information on all permit actions is available for review by the public in the Air Quality section of the DEQ Web page: www.deq.state.ok.us/.

Fee Paid

Fee paid: \$2,000 for construction of a new Part 70 source.

SECTION XI. SUMMARY

There are no active Air Quality compliance or enforcement issues that would affect the issuance of this permit. Issuance of the construction permit is recommended.

**PERMIT TO CONSTRUCT
AIR POLLUTION CONTROL FACILITY
SPECIFIC CONDITIONS**

**Pryor Plant Chemical Company
Pryor - Mid America Industrial Park Facility**

Permit No. 2008-100-C (PSD)

The permittee is authorized to construct in conformity with the specifications in the application for a construction permit submitted to Air Quality on March 27, 2008, with additional information received on August 14, 27, and 29; September 19; October 10, 22, and 29 2008; November 3, 19, 20, and 25; and December 17, 2008. The Evaluation Memorandum dated February 19, 2009, explains the derivation of applicable permit requirements and the estimates of emissions; however, it does not contain operating limitations or permit requirements. Commencing construction or operations under this permit constitutes acceptance of, and consent to, the conditions contained herein.

1. Points of emission and emissions limitations. Permittee shall maintain and operate the facility in a manner to prevent the exceedance of ambient air quality standards contained in OAC 252:100-3 and the limitations established by this permit. Compliance with emissions limits shall be monitored and determined based on the following averaging periods:

[OAC 252:100-8-6(a)(1)], [OAC 252:100-7-15(d)]

- i. CO: 1-hour and 8-hour averages; all emissions units.
- ii. PM₁₀: 24-hour average; all emissions units.
- iii. NO₂: 3-hour average; combustion equipment rated ≥ 50 MMBTUH. [OAC 252:100-33]
7-day (168-hour) rolling cumulative average; nitric acid plants
- iv. All annual pollutant and throughput limits: Monthly and 12-month rolling
cumulative, unless specified more frequently.

EUG NO. 1 - AMMONIA PLANT #4

- A. Maximum production of ammonia from Ammonia Plant #4 shall not exceed 700 tons per day. The permittee shall follow good combustion practices as required by Specific Condition No. 6 so as to limit hourly and annual emissions to the values specified in the following table. Compliance with the SO₂ limit is determined by the fuel sulfur monitoring requirements of Condition No. 2.

EU ID 101 - Primary Reformer

Pollutant	Maximum (lb/hr)	Annual (ton/yr)
CO	18.53	81.16
NO _x	11.93	52.23
PM	1.68	7.34
PM ₁₀	1.26	5.51
VOC	1.21	5.31
SO ₂	1.35	5.93

- B. Maximum condensate throughput and emissions from the Condensate Steam Flash Drum shall not exceed the limits specified in the following table. The permittee shall control process conditions as required by Specific Condition No. 6 so as to limit hourly and annual emissions to the values specified in the following table.

EU ID 102 - Condensate Steam Flash Drum

Pollutant	Condensate Throughput	Emissions	
	lb/hr	Maximum (lb/hr)	Annual (ton/yr)
VOC	80,064	9.21	40.33
NH ₃		0.80	3.51
CH ₃ OH		3.42	9.5

EUG NO. 3 – NITRIC ACID PLANTS #1, #3, and #4

- C. Maximum nitric acid production and emissions from Nitric Acid Plant #1, Nitric Acid Plant #3, and Nitric Acid Plant #4 and emissions of ammonia from Nitric Acid Plant #4 shall not exceed the limits specified in the following tables. Compliance with the NO_x emission limits for Nitric Acid Plant #1, Nitric Acid Plant #3, and Nitric Acid Plant #4 shall be monitored per the requirements in Specific Condition 7. The permittee shall record the hourly emissions, the monthly emissions, the 12-month rolling cumulative emissions, the hourly production of 100% nitric acid, the monthly production of 100% nitric acid, the 12-month rolling cumulative production of 100% nitric acid, and the daily operating hours.

- i. Annual Limit. Compliance with the annual NO_x and ammonia slip emissions limits (in tons per year) shall be determined by comparing the 12-month rolling cumulative emissions (in tons per year) to the annual limits (in tons per year) listed in the table below. Compliance with the annual average NO_x emission factors (in pounds per ton) shall be determined by dividing the 12-month rolling cumulative emissions (in pounds) by the 12-month rolling cumulative production of 100% nitric acid (in tons) to obtain a value in pounds per ton, and comparing the result to the limits listed in the table below. Compliance shall be verified monthly, datum the same time on the first day of each month (or the following business day if the facility is not in operation on the designated day).

$$\text{Emissions}_{12\text{-Month Average}} = \frac{\text{12-Month Rolling Cumulative Emissions}}{\text{12-Month Rolling Cumulative 100\% Nitric Acid}}$$

- ii. 7-day (168-hour) Average Limit. Compliance (in pounds per ton) shall be determined by dividing the 7-day (168-hour) rolling cumulative emissions by the corresponding production of 100% nitric acid for the applicable 7-day (168-hour) period and comparing the result to the limit of 3.0 pounds per ton.

$$\text{Emissions}_{7\text{-Day Average}} = \frac{7\text{-Day (168-hour) Rolling Cumulative Emissions}}{7\text{-Day (168-hour) Rolling Cumulative 100\% Nitric Acid}}$$

- iii. Hourly Limit for Nitric Acid Production. Compliance shall be determined daily, for each individual nitric acid plant. Compliance shall be determined by dividing the daily production of 100% nitric acid by the actual hours of process equipment operation of each nitric acid plant.

EU ID 301, 302, 303 – Nitric Acid Plants #1, #3, and #4

Emissions Point	Nitric Acid Production	NO _x Emissions		
		(12-month rolling cumulative)		7-day Average
	(ton/hr)	Annual (ton/yr)	Annual (lb/ton)	Maximum (lb/ton)
Plant #1	8.3	58.2	1.6	3.0
Plant #3	6.3	44.2	1.6	3.0
Plant #4	14.6	159.9	2.5	3.0

- iv. Hourly Limit for Ammonia Slip Emissions. Compliance shall be based on the manufacturer's guarantee of 10 ppmv in the exhaust gas of the SCR unit. Initial compliance with the limit shall be verified by the initial performance test required in Specific Condition No. 9. Continuous compliance shall be documented by means of continuous NO_x monitoring, tracking nitric acid production, and operation of the SCR unit in accordance with the manufacturer's recommendations. Records of these monitoring parameters and operating practices shall be maintained at the facility.

EU ID 303 - Nitric Acid Plant #4

Emissions Point	NH ₃ Slip Emissions	
	Maximum (lb/hr)	Annual ton/yr
Plant #4	0.9	3.8

EUG NO. 4 – NITRIC ACID PREHEATERS #1, #3, and #4

- D. Emissions from each individual nitric acid preheater shall not exceed the limits specified in the following table. The permittee shall follow good combustion practices as required by Specific Condition No. 6 to limit hourly and annual emissions to the values specified in the following table. Compliance with the SO₂ limit is determined by the fuel sulfur monitoring requirements of Condition No. 2.

EU ID 401, 402, 403 - Nitric Acid Preheaters #1, #3, and #4

Pollutant	Emissions	
	Maximum (lb/hr)	Annual (ton/yr)
CO	1.65	7.21
NO _x	0.98	4.29

Pollutant	Emissions	
	Maximum (lb/hr)	Annual (ton/yr)
PM	0.15	0.65
PM ₁₀	0.15	0.49
VOC	0.11	0.47
SO ₂	0.03	0.13

EUG NO. 5 – CARBON DIOXIDE VENT

E. PPCC produces carbon dioxide as a saleable product. Carbon dioxide is not a regulated pollutant at this time. Carbon monoxide is generated as an off-gas from the carbon dioxide process. Carbon dioxide venting is limited as indicated in the following table for the purpose of limiting the associated carbon monoxide emissions. Carbon monoxide emissions from the Carbon Dioxide Vent shall not exceed the limits specified in the following table. Compliance with the carbon dioxide venting and carbon monoxide emission limits shall be demonstrated by multiplying the actual daily ammonia production total by 1.25, which is the stoichiometric ratio of CO₂ generated from the ammonia production process with a contingency; multiplying that product by an industry established carbon monoxide percentage of 0.1; and then dividing the result by the process equipment (i.e., ammonia process equipment) operating hours for that day. These values shall be verified during initial performance testing over a range of operational parameters expected to occur during normal operations.

EU ID 501 – Carbon Dioxide Vent

Pollutant	Emissions Factor	Carbon Dioxide Vented ton/hr	CO Emissions	
	lb/ton		Maximum (lb/hr)	Annual (ton/yr)
CO	0.1	36.5	3.65	15.99

EUG NO. 6 - AMMONIUM NITRATE PLANTS #1 and #2

F. Maximum ammonium nitrate production shall not exceed the following individual rates.

i. Ammonium Nitrate Plant #1 - 23.8 tons per hour

ii. Ammonium Nitrate Plant #2 - 23.8 tons per hour

PPCC does not measure the hourly production rate for liquid ammonium nitrate. Therefore, compliance with the liquid ammonium nitrate production limits and emission limits indicated in the table below shall be demonstrated for each plant by dividing the actual daily liquid ammonium nitrate production total by the process equipment operating hours for that day.

G. Emissions shall not exceed the following limits from either neutralizer.

EU ID 601, 602 - Ammonium Nitrate Plant #1 Neutralizer Vent and Ammonium Nitrate Plant Run Down Tank Vent

Pollutant	Emissions
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	Maximum (lb/hr)	Annual (ton/yr)
NH ₃	0.8	0.4
NH ₄ NO ₃	1.6	0.4
PM	2.1	0.6
PM ₁₀	0.1	0.3

EUG NO. 7 - GRANULATOR SCRUBBERS #1, #2, and #3

H. Maximum dry ammonium nitrate production shall not exceed 16.7 tons per hour from the granulator production system or prill tower controlled by either Granulator Scrubber #1, #2, or #3, 24-hour average. Compliance with the granulator or prill tower production limits and the emission limits indicated in the table below shall be demonstrated by dividing the actual daily dry ammonium nitrate production total by the process equipment operating hours for that day.

I. Emissions from any individual granulator scrubber shall not exceed the following limits.

EU ID 701, 702, 703 - Granulator Scrubbers #1, #2, and #3

Pollutant	Emissions	
	Maximum (lb/hr)	Annual (ton/yr)
PM	0.7	3.0
PM ₁₀	0.7	3.0
NH ₃	2.4	10.3

EUG NO. 8 – BOILERS #1 and #2

J. Emissions from each boiler shall not exceed the following limits.

EU ID 801, 802 - Boilers #1 and #2

Pollutant	Emissions	
	Maximum (lb/hr)	Annual (ton/yr)
CO	6.6	28.9
NO _x	4.0	17.2
PM	0.6	2.7
PM ₁₀	0.5	2.0
SO ₂	0.2	0.6
VOC	0.5	1.9
Formaldehyde	0.01	0.03

K. NSPS Dc, §60.48c, Reporting and recordkeeping requirements. [40 CFR 60.72]

- i. Boiler #2. As an alternative to meeting the daily record keeping requirements of §60.48c(g)(1), the permittee may record and maintain records of the amount of each fuel combusted in each boiler each calendar month.

EUG NO. 9 - COOLING TOWERS #1 and #2

- L. Maximum circulation rate of Cooling Tower # 1 shall not exceed 1,470,000 gallons per hour.
- M. Maximum circulation rate of Cooling Tower No. 2 shall not exceed 2,400,000 gallons per hour.
- N. No chromium-containing additives shall be used in the cooling towers.
- O. Emissions shall not exceed the following limits.

EU ID 901 – Cooling Tower No. 1

Pollutant	Emissions	
	Maximum (lb/hr)	Annual (ton/yr)
PM ₁₀	1.18	5.16

EU ID 902 – Cooling Tower No. 2

Pollutant	Emissions	
	Maximum (lb/hr)	Annual (ton/yr)
PM ₁₀	1.92	8.42

- P. Compliance with the circulation and emission limits for each cooling tower shall be demonstrated by multiplying total pump capacity by the number of pumps operating during each hour. Pump capacity shall be demonstrated either by the manufacturer's visible capacity rating stamped on the equipment or by maintaining a copy of the manufacturer's performance data at the facility. In either event, the pump model or serial number must be identified on the pump.

EUG NO. 10 – FUGITIVE EMISSIONS

- Q. At this time, there is no limit on fugitive emissions. The following estimate is for emissions of ammonia from process piping and components.

Component Type	Type of Service	Count	Emissions Factors (lb/hr-component)	Potential Emissions	
				Maximum (lb/hr)	Annual (ton/yr)
Valves	Gas	50	0.0132	0.66	2.89
	Light Liquid	100	0.0089	0.89	3.90
Pump Seals	Light Liquid	0	0.0439	0.00	0.00
Compressor Seals	Gas	2	0.5027	1.00	4.38
Pressure Relief Valves	Gas	10	0.2293	2.29	10.03
Connectors	All	100	0.0041	0.41	1.80

Open-ended Lines	All	50	0.0038	0.19	0.83
Sampling Connections	All	50	0.0331	1.66	7.27
Total				7.10	31.10

2. The fuel-burning equipment shall be fired with pipeline natural gas having 0.5 grains/100 scf or less total sulfur. EU ID 101 Ammonia Plant #4 Primary Reformer may be fired on either natural gas or on a combination of natural gas and waste gas generated from the Natural Gas Desulfurization Unit. Compliance with the sulfur limit on pipeline gas can be shown by the following methods: for gaseous fuel, a current gas company bill, lab analysis, stain-tube analysis, gas contract, tariff sheet, or other approved methods. Compliance shall be demonstrated at least once annually. [OAC 252:100-8-6(a)(1)]
3. The permittee shall conduct only the processes associated with the manufacture of ammonia, ammonium nitrate, urea, nitric acid, and by-products including carbon dioxide. [OAC 252:100-8-6(a)(1)]
4. Each Emissions Unit (EU) shall be clearly labeled with the EU number on the unit in a conspicuous location that can be easily accessed for inspection. For units not having emissions controls, the EU label shall be located as near the emissions stack as practical, considering safety and ease of inspection. [OAC 252:100-43]
5. The permittee shall be authorized to operate the sources 24 hours per day, every day of the year. [OAC 252:100-8-6(a)(1)]
6. Monitoring. [OAC 252:100-8-6(a)(1)], [OAC 252:100-43]
 - A. Ammonia Plant #4 - Condensate Steam Flash Drum, Point ID #102. The condensate flow shall not exceed 80,064 pounds per hour, or whatever maximum rate is necessary to maintain methanol emissions at or below 9.5 tons per year. Permittee shall conduct testing of methanol concentration in the inlet and outlet condensate stream monthly using EPA Method 308 or 320, beginning the first month following the initial performance test required in Specific Condition No. 9.
 - i. In addition to the monthly testing for methanol and the initial performance test requirements contained in Specific Condition No. 9, the permittee shall, within thirty (30) days of completion of the initial performance test, develop and submit to AQD for approval, a plan for monitoring process conditions using parameters such as temperature, pressure, condensate throughput, and periodic measurement of methanol in the condensate to demonstrate continuous compliance with the methanol emission limits. The plan shall establish action levels corresponding to operating conditions which cannot be exceeded to ensure compliance with the permit limits, as well as the technical justification for selection of the selected monitoring parameters.
 - B. Good Combustion Practices shall be followed for the Ammonia Plant #4 Primary Reformer, Boilers #1 and #2, Nitric Acid Preheaters #1, #3, and #4 - Point ID #101, #801, #802, #401, #402, #403.
 - i. The permittee shall maintain and operate combustion equipment to achieve optimum combustion efficiency and perform periodic maintenance necessary to maintain proper operation.

- ii. The permittee shall perform weekly inspections of the combustion controls for proper operation. Burners shall be inspected during shutdown. Permittee shall immediately perform any maintenance necessary to maintain equipment at the performance standards specified by the manufacturer(s).
- iii. The permittee shall perform daily opacity measurements using EPA Method 9 and conduct initial performance testing to correlate the PM limit to an opacity action level.

C. Good Operation Practices – All Emission Point IDs.

The permittee shall exercise all reasonable and necessary operational and preventive measures and actions to control emissions within the BACT limits specified in Specific Condition No. 1 including, but not limited to, minimizing startup and shutdown times and reducing throughput.

7. Compliance Assurance Monitoring (CAM). [OAC 252:100-8-6(a)(1)], [OAC 252:100-43]

A. The permittee shall implement compliance assurance monitoring (CAM) in accordance with 40 CFR Part 64 and shall install, calibrate, maintain, and operate continuous monitoring systems (CEMS) in accordance with Part 64 and any applicable referenced regulations therein.

i. Nitric Acid Plants #1, #3, and #4, EU IDs 301, 302, and 303.

(1) Permittee shall limit the hourly nitric acid production to the following individual rates.

- a. Nitric Acid Plant #1 - 8.3 tons per hour
- b. Nitric Acid Plant #3 - 6.3 tons per hour
- c. Nitric Acid Plant #4 - 14.6 tons per hour

Compliance with the production limit for each plant shall be determined by dividing the daily production of 100% nitric acid by the actual hours of process equipment operation.

The permittee shall install, calibrate, maintain, and operate a continuous emissions monitoring system for measuring nitrogen oxides (NO_x) in accordance with the provisions of 40 C.F.R. §60.13 and conduct initial performance testing.

- ii. Granulator Scrubbers #1, #2, and #3, EU IDs 701, 702, and 703. The permittee shall limit the hourly production rate of dry ammonium nitrate at the granulator or prill tower to 16.7 tons per hour. Compliance with the production limit shall be demonstrated by dividing the actual daily dry ammonium nitrate production total by the process equipment operating hours for that day. The permittee shall perform daily opacity measurements using EPA Method 9 and conduct initial performance testing to correlate the PM limit to an opacity action level. Within sixty days (60) of startup, permittee shall submit, for approval by the Air Quality Division, a proposed monitoring plan that includes, in addition to the daily opacity monitoring requirement of this condition, at least one secondary monitoring parameter to be used as a surrogate or parametric monitoring to document continuous compliance with the permit limits.

- B. The CEMS shall be fully functional and properly operating at startup of the nitric acid plants. Permittee shall follow the requirements 40 C.F.R. §60.13 including installation and calibration. [40 CFR 64.4(e)]
- C. The permittee shall comply with all applicable requirements of CAM including but not limited to the following. [40 CFR 64.1 to 64.9]
- i. §64.7 Operation of approved monitoring;
 - ii. §64.8 Quality improvement plan (QIP) requirements; and
 - iii. §64.9 Reporting and recordkeeping requirements.
8. Maintenance and Monitoring of Controls. [OAC 252:100-43]
- A. The air pollution control devices may be modified or replaced, upon prior approval of the AQD, provided that it can be demonstrated that the replacement equipment is at least as efficient as the previous pollution control device.
- B. Within 60 days of startup of each emissions unit, permittee shall submit an operation and maintenance plan.
- i. A visual inspection of each pollution control device shall be performed at a frequency recommended by the manufacturer(s), but no less than weekly. The pollution control devices shall be maintained and operated as recommended by the manufacturers to maintain the required efficiency, including the recommended operating parameters such as, but not limited to, operating pressures/temperatures. Expendable components shall be replaced on a frequency recommended by the manufacturer, or sooner if necessary. The capture system and the housing for the controls shall be constructed and maintained to prevent bypass of emissions.
 - ii. A complete preventive maintenance inspection of the pollution control device shall be performed semi-annually, or at intervals recommended by the manufacturer, whichever occurs more frequently.
 - iii. In the event of any malfunction of pollution control equipment which results in an exceedance of any permit limit, the permittee shall immediately shut down the affected emissions unit(s) and perform any repairs necessary to restore the performance of the pollution control equipment to the permitted standard(s), prior to returning the emissions units back to production.
9. Within 60 days of start-up, and at other such times as directed by the AQD, the permittee shall conduct performance testing as follows and furnish a written report to the AQD. Testing shall be conducted while a process unit is being operated at least 90% of maximum hourly capacity. A sampling protocol and notification of testing date(s) shall be submitted at least 30 days in advance of commencement of testing. The following USEPA methods shall be used for testing of emissions, unless otherwise approved by Air Quality: [OAC 252:100-43]

Point ID	Description	Pollutants Tested	Test Methods Required
102	Condensate Steam Stripper	VOC, Methanol	1 – 4, 25A, 308 or 320
301	Nitric Acid Plant # 1 - Fumeabator Unit	NOx, CO	1 – 4, 7E, 10
302	Nitric Acid Plant # 3 - Fumeabator Unit	NOx, CO	1 – 4, 7E, 10
303	Nitric Acid Plant # 4 - SCR Unit	NOx, CO, NH ₃	1 – 4, 7E, 10, 350.2 or 350.3
501	Carbon Dioxide Vent	CO	1 – 4, 10

701	Granulator Scrubber #1	PM	1 – 5
702	Granulator Scrubber #2	PM	1 – 5
703	Granulator Scrubber #3	PM	1 – 5

10. The permittee shall keep records of operations as listed below to verify Insignificant Activities. These records shall be kept on-site for a period of at least five years following dates of recording and shall be made available to regulatory personnel upon request. No recordkeeping is required for those operations which qualify as Trivial Activities.

[OAC 252:100-8-2], [OAC 252:100-8-6 (a)(3)(B)]

- a. Emissions from storage tanks constructed with a capacity less than 39,894 gallons, which store VOC with a vapor pressure less than 1.5 psia at maximum storage temperature. Records verifying the contents of the tanks.
- b. Activities having the potential to emit no more than 5 TPY (actual) of any criteria pollutant. Records sufficient to verify actual emissions.

11. The permittee shall keep records of facility operations as listed below. These records shall be retained on-site for a period of at least five years following the dates of recording and shall be made available to regulatory personnel upon request.

[OAC 252:100-8-6 (a)(3)(B)]

- a. Total throughput of raw materials and products having limits specified in Condition No. 1; hourly, daily, 7-day, rolling cumulative monthly, and 12-month rolling cumulative total, as specified in the condition for each limit.
- b. Records of monitoring and inspection of all air pollution control equipment required by the conditions of this permit.
- c. Calculations showing compliance with all specific conditions that require calculations.
- d. For the fuel(s) burned, the appropriate document(s) as described in Specific Condition No. 2.
- e. Records required by NSPS Dc.
- f. Records required for CEMS operations.
- g. Records required for CAM.

12. The Permit Shield (Standard Conditions, Section VI) is extended to the following requirements that have been determined to be inapplicable to this facility.

[OAC 252:100-8-6(d)(2)]

- a. OAC 252:100-7 Permits for Minor Facilities
- b. OAC 252:100-11 Alternative Emissions Reduction
- c. OAC 252:100-15 Mobile Sources
- d. OAC 252:100-17 Incinerators
- e. OAC 252:100-23 Cotton Gins
- f. OAC 252:100-24 Particulate Emissions From Grain, Feed, or Seed Operations
- g. OAC 252:100-35 Carbon Monoxide
- h. OAC 252:100-39 Nonattainment Areas
- i. OAC 252:100-47 Landfills
- j. 40 CFR Part 72 Acid Rain

**MAJOR SOURCE AIR QUALITY PERMIT
STANDARD CONDITIONS
(December 22, 2008)**

SECTION I. DUTY TO COMPLY

A. This is a permit to operate / construct this specific facility in accordance with the federal Clean Air Act (42 U.S.C. 7401, et al.) and under the authority of the Oklahoma Clean Air Act and the rules promulgated there under. [Oklahoma Clean Air Act, 27A O.S. § 2-5-112]

B. The issuing Authority for the permit is the Air Quality Division (AQD) of the Oklahoma Department of Environmental Quality (DEQ). The permit does not relieve the holder of the obligation to comply with other applicable federal, state, or local statutes, regulations, rules, or ordinances. [Oklahoma Clean Air Act, 27A O.S. § 2-5-112]

C. The permittee shall comply with all conditions of this permit. Any permit noncompliance shall constitute a violation of the Oklahoma Clean Air Act and shall be grounds for enforcement action, permit termination, revocation and reissuance, or modification, or for denial of a permit renewal application. All terms and conditions are enforceable by the DEQ, by the Environmental Protection Agency (EPA), and by citizens under section 304 of the Federal Clean Air Act (excluding state-only requirements). This permit is valid for operations only at the specific location listed.

[40 C.F.R. §70.6(b), OAC 252:100-8-1.3 and OAC 252:100-8-6(a)(7)(A) and (b)(1)]

D. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of the permit. However, nothing in this paragraph shall be construed as precluding consideration of a need to halt or reduce activity as a mitigating factor in assessing penalties for noncompliance if the health, safety, or environmental impacts of halting or reducing operations would be more serious than the impacts of continuing operations. [OAC 252:100-8-6(a)(7)(B)]

SECTION II. REPORTING OF DEVIATIONS FROM PERMIT TERMS

A. Any exceedance resulting from an emergency and/or posing an imminent and substantial danger to public health, safety, or the environment shall be reported in accordance with Section XIV (Emergencies). [OAC 252:100-8-6(a)(3)(C)(iii)(I) & (II)]

B. Deviations that result in emissions exceeding those allowed in this permit shall be reported consistent with the requirements of OAC 252:100-9, Excess Emission Reporting Requirements. [OAC 252:100-8-6(a)(3)(C)(iv)]

C. Every written report submitted under this section shall be certified as required by Section III (Monitoring, Testing, Recordkeeping & Reporting), Paragraph F.

[OAC 252:100-8-6(a)(3)(C)(iv)]

SECTION III. MONITORING, TESTING, RECORDKEEPING & REPORTING

A. The permittee shall keep records as specified in this permit. These records, including monitoring data and necessary support information, shall be retained on-site or at a nearby field office for a period of at least five years from the date of the monitoring sample, measurement, report, or application, and shall be made available for inspection by regulatory personnel upon request. Support information includes all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. Where appropriate, the permit may specify that records may be maintained in computerized form.

[OAC 252:100-8-6 (a)(3)(B)(ii), OAC 252:100-8-6(c)(1), and OAC 252:100-8-6(c)(2)(B)]

B. Records of required monitoring shall include:

- (1) the date, place and time of sampling or measurement;
- (2) the date or dates analyses were performed;
- (3) the company or entity which performed the analyses;
- (4) the analytical techniques or methods used;
- (5) the results of such analyses; and
- (6) the operating conditions existing at the time of sampling or measurement.

[OAC 252:100-8-6(a)(3)(B)(i)]

C. No later than 30 days after each six (6) month period, after the date of the issuance of the original Part 70 operating permit, the permittee shall submit to AQD a report of the results of any required monitoring. All instances of deviations from permit requirements since the previous report shall be clearly identified in the report. Submission of these periodic reports will satisfy any reporting requirement of Paragraph E below that is duplicative of the periodic reports, if so noted on the submitted report.

[OAC 252:100-8-6(a)(3)(C)(i) and (ii)]

D. If any testing shows emissions in excess of limitations specified in this permit, the owner or operator shall comply with the provisions of Section II (Reporting Of Deviations From Permit Terms) of these standard conditions.

[OAC 252:100-8-6(a)(3)(C)(iii)]

E. In addition to any monitoring, recordkeeping or reporting requirement specified in this permit, monitoring and reporting may be required under the provisions of OAC 252:100-43, Testing, Monitoring, and Recordkeeping, or as required by any provision of the Federal Clean Air Act or Oklahoma Clean Air Act.

[OAC 252:100-43]

F. Any document submitted in accordance with this permit shall be certified by a responsible official. This certification shall be signed by a responsible official, and shall contain the following language: "I certify, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete." However, an exceedance report that must be submitted within ten days of the exceedance under Section II (Reporting Of Deviations From Permit Terms) or Section XIV (Emergencies) may be submitted without a certification, if an appropriate certification is provided within ten days thereafter, together with any corrected or supplemental information required concerning the exceedance.

[OAC 252:100-8-5(f), OAC 252:100-8-6(a)(3)(C)(iv), OAC 252:100-8-6(c)(1) and OAC 252:100-9-3.1(c)]

G. Any owner or operator subject to the provisions of New Source Performance Standards ("NSPS") under 40 CFR Part 60 or National Emission Standards for Hazardous Air Pollutants ("NESHAPs") under 40 CFR Parts 61 and 63 shall maintain a file of all measurements and other information required by the applicable general provisions and subpart(s). These records shall be maintained in a permanent file suitable for inspection, shall be retained for a period of at least five years as required by Paragraph A of this Section, and shall include records of the occurrence and duration of any start-up, shutdown, or malfunction in the operation of an affected facility, any malfunction of the air pollution control equipment; and any periods during which a continuous monitoring system or monitoring device is inoperative.

[40 C.F.R. §§60.7 and 63.10, 40 CFR Parts 61, Subpart A, and OAC 252:100, Appendix Q]

H. The permittee of a facility that is operating subject to a schedule of compliance shall submit to the DEQ a progress report at least semi-annually. The progress reports shall contain dates for achieving the activities, milestones or compliance required in the schedule of compliance and the dates when such activities, milestones or compliance was achieved. The progress reports shall also contain an explanation of why any dates in the schedule of compliance were not or will not be met, and any preventive or corrective measures adopted. [OAC 252:100-8-6(c)(4)]

I. All testing must be conducted under the direction of qualified personnel by methods approved by the Division Director. All tests shall be made and the results calculated in accordance with standard test procedures. The use of alternative test procedures must be approved by EPA. When a portable analyzer is used to measure emissions it shall be setup, calibrated, and operated in accordance with the manufacturer's instructions and in accordance with a protocol meeting the requirements of the "AQD Portable Analyzer Guidance" document or an equivalent method approved by Air Quality.

[OAC 252:100-8-6(a)(3)(A)(iv), and OAC 252:100-43]

J. The reporting of total particulate matter emissions as required in Part 7 of OAC 252:100-8 (Permits for Part 70 Sources), OAC 252:100-19 (Control of Emission of Particulate Matter), and OAC 252:100-5 (Emission Inventory), shall be conducted in accordance with applicable testing or calculation procedures, modified to include back-half condensables, for the concentration of particulate matter less than 10 microns in diameter (PM₁₀). NSPS may allow reporting of only particulate matter emissions caught in the filter (obtained using Reference Method 5).

K. The permittee shall submit to the AQD a copy of all reports submitted to the EPA as required by 40 C.F.R. Part 60, 61, and 63, for all equipment constructed or operated under this permit subject to such standards. [OAC 252:100-8-6(c)(1) and OAC 252:100, Appendix Q]

SECTION IV. COMPLIANCE CERTIFICATIONS

A. No later than 30 days after each anniversary date of the issuance of the original Part 70 operating permit, the permittee shall submit to the AQD, with a copy to the US EPA, Region 6, a certification of compliance with the terms and conditions of this permit and of any other applicable requirements which have become effective since the issuance of this permit.

[OAC 252:100-8-6(c)(5)(A), and (D)]

B. The compliance certification shall describe the operating permit term or condition that is the basis of the certification; the current compliance status; whether compliance was continuous or intermittent; the methods used for determining compliance, currently and over the reporting period. The compliance certification shall also include such other facts as the permitting authority may require to determine the compliance status of the source.

[OAC 252:100-8-6(c)(5)(C)(i)-(v)]

C. The compliance certification shall contain a certification by a responsible official as to the results of the required monitoring. This certification shall be signed by a responsible official, and shall contain the following language: "I certify, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete."

[OAC 252:100-8-5(f) and OAC 252:100-8-6(c)(1)]

D. Any facility reporting noncompliance shall submit a schedule of compliance for emissions units or stationary sources that are not in compliance with all applicable requirements. This schedule shall include a schedule of remedial measures, including an enforceable sequence of actions with milestones, leading to compliance with any applicable requirements for which the emissions unit or stationary source is in noncompliance. This compliance schedule shall resemble and be at least as stringent as that contained in any judicial consent decree or administrative order to which the emissions unit or stationary source is subject. Any such schedule of compliance shall be supplemental to, and shall not sanction noncompliance with, the applicable requirements on which it is based, except that a compliance plan shall not be required for any noncompliance condition which is corrected within 24 hours of discovery.

[OAC 252:100-8-5(e)(8)(B) and OAC 252:100-8-6(c)(3)]

SECTION V. REQUIREMENTS THAT BECOME APPLICABLE DURING THE PERMIT TERM

The permittee shall comply with any additional requirements that become effective during the permit term and that are applicable to the facility. Compliance with all new requirements shall be certified in the next annual certification.

[OAC 252:100-8-6(c)(6)]

SECTION VI. PERMIT SHIELD

A. Compliance with the terms and conditions of this permit (including terms and conditions established for alternate operating scenarios, emissions trading, and emissions averaging, but excluding terms and conditions for which the permit shield is expressly prohibited under OAC 252:100-8) shall be deemed compliance with the applicable requirements identified and included in this permit. [OAC 252:100-8-6(d)(1)]

B. Those requirements that are applicable are listed in the Standard Conditions and the Specific Conditions of this permit. Those requirements that the applicant requested be determined as not applicable are summarized in the Specific Conditions of this permit. [OAC 252:100-8-6(d)(2)]

SECTION VII. ANNUAL EMISSIONS INVENTORY & FEE PAYMENT

The permittee shall file with the AQD an annual emission inventory and shall pay annual fees based on emissions inventories. The methods used to calculate emissions for inventory purposes shall be based on the best available information accepted by AQD.

[OAC 252:100-5-2.1, OAC 252:100-5-2.2, and OAC 252:100-8-6(a)(8)]

SECTION VIII. TERM OF PERMIT

A. Unless specified otherwise, the term of an operating permit shall be five years from the date of issuance. [OAC 252:100-8-6(a)(2)(A)]

B. A source's right to operate shall terminate upon the expiration of its permit unless a timely and complete renewal application has been submitted at least 180 days before the date of expiration. [OAC 252:100-8-7.1(d)(1)]

C. A duly issued construction permit or authorization to construct or modify will terminate and become null and void (unless extended as provided in OAC 252:100-8-1.4(b)) if the construction is not commenced within 18 months after the date the permit or authorization was issued, or if work is suspended for more than 18 months after it is commenced. [OAC 252:100-8-1.4(a)]

D. The recipient of a construction permit shall apply for a permit to operate (or modified operating permit) within 180 days following the first day of operation. [OAC 252:100-8-4(b)(5)]

SECTION IX. SEVERABILITY

The provisions of this permit are severable and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

[OAC 252:100-8-6 (a)(6)]

SECTION X. PROPERTY RIGHTS

A. This permit does not convey any property rights of any sort, or any exclusive privilege.

[OAC 252:100-8-6(a)(7)(D)]

B. This permit shall not be considered in any manner affecting the title of the premises upon which the equipment is located and does not release the permittee from any liability for damage to persons or property caused by or resulting from the maintenance or operation of the equipment for which the permit is issued.

[OAC 252:100-8-6(c)(6)]

SECTION XI. DUTY TO PROVIDE INFORMATION

A. The permittee shall furnish to the DEQ, upon receipt of a written request and within sixty (60) days of the request unless the DEQ specifies another time period, any information that the DEQ may request to determine whether cause exists for modifying, reopening, revoking, reissuing, terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the DEQ copies of records required to be kept by the permit.

[OAC 252:100-8-6(a)(7)(E)]

B. The permittee may make a claim of confidentiality for any information or records submitted pursuant to 27A O.S. § 2-5-105(18). Confidential information shall be clearly labeled as such and shall be separable from the main body of the document such as in an attachment.

[OAC 252:100-8-6(a)(7)(E)]

C. Notification to the AQD of the sale or transfer of ownership of this facility is required and shall be made in writing within thirty (30) days after such sale or transfer.

[Oklahoma Clean Air Act, 27A O.S. § 2-5-112(G)]

SECTION XII. REOPENING, MODIFICATION & REVOCATION

A. The permit may be modified, revoked, reopened and reissued, or terminated for cause. Except as provided for minor permit modifications, the filing of a request by the permittee for a permit modification, revocation and reissuance, termination, notification of planned changes, or anticipated noncompliance does not stay any permit condition.

[OAC 252:100-8-6(a)(7)(C) and OAC 252:100-8-7.2(b)]

B. The DEQ will reopen and revise or revoke this permit prior to the expiration date in the following circumstances:

- (1) Additional requirements under the Clean Air Act become applicable to a major source category three or more years prior to the expiration date of this permit. No such reopening is required if the effective date of the requirement is later than the expiration date of this permit.
- (2) The DEQ or the EPA determines that this permit contains a material mistake or that the permit must be revised or revoked to assure compliance with the applicable requirements.
- (3) The DEQ or the EPA determines that inaccurate information was used in establishing the emission standards, limitations, or other conditions of this permit. The DEQ may revoke and not reissue this permit if it determines that the permittee has submitted false or misleading information to the DEQ.

- (4) DEQ determines that the permit should be amended under the discretionary reopening provisions of OAC 252:100-8-7.3(b).

[OAC 252:100-8-7.3 and OAC 252:100-8-7.4(a)(2)]

- C. The permit may be reopened for cause by EPA, pursuant to the provisions of OAC 100-8-7.3(d).

[OAC 100-8-7.3(d)]

- D. The permittee shall notify AQD before making changes other than those described in Section XVIII (Operational Flexibility), those qualifying for administrative permit amendments, or those defined as an Insignificant Activity (Section XVI) or Trivial Activity (Section XVII). The notification should include any changes which may alter the status of a "grandfathered source," as defined under AQD rules. Such changes may require a permit modification.

[OAC 252:100-8-7.2(b) and OAC 252:100-5-1.1]

- E. Activities that will result in air emissions that exceed the trivial/insignificant levels and that are not specifically approved by this permit are prohibited.

[OAC 252:100-8-6(c)(6)]

SECTION XIII. INSPECTION & ENTRY

- A. Upon presentation of credentials and other documents as may be required by law, the permittee shall allow authorized regulatory officials to perform the following (subject to the permittee's right to seek confidential treatment pursuant to 27A O.S. Supp. 1998, § 2-5-105(18) for confidential information submitted to or obtained by the DEQ under this section):

- (1) enter upon the permittee's premises during reasonable/normal working hours where a source is located or emissions-related activity is conducted, or where records must be kept under the conditions of the permit;
- (2) have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit;
- (3) inspect, at reasonable times and using reasonable safety practices, any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit; and
- (4) as authorized by the Oklahoma Clean Air Act, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit.

[OAC 252:100-8-6(c)(2)]

SECTION XIV. EMERGENCIES

- A. Any exceedance resulting from an emergency shall be reported to AQD promptly but no later than 4:30 p.m. on the next working day after the permittee first becomes aware of the exceedance. This notice shall contain a description of the emergency, the probable cause of the exceedance, any steps taken to mitigate emissions, and corrective actions taken.

[OAC 252:100-8-6 (a)(3)(C)(iii)(I) and (IV)]

B. Any exceedance that poses an imminent and substantial danger to public health, safety, or the environment shall be reported to AQD as soon as is practicable; but under no circumstance shall notification be more than 24 hours after the exceedance.

[OAC 252:100-8-6(a)(3)(C)(iii)(II)]

C. An "emergency" means any situation arising from sudden and reasonably unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under this permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventive maintenance, careless or improper operation, or operator error.

[OAC 252:100-8-2]

D. The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs or other relevant evidence that:

- (1) an emergency occurred and the permittee can identify the cause or causes of the emergency;
- (2) the permitted facility was at the time being properly operated;
- (3) during the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards or other requirements in this permit.

[OAC 252:100-8-6 (e)(2)]

E. In any enforcement proceeding, the permittee seeking to establish the occurrence of an emergency shall have the burden of proof.

[OAC 252:100-8-6(e)(3)]

F. Every written report or document submitted under this section shall be certified as required by Section III (Monitoring, Testing, Recordkeeping & Reporting), Paragraph F.

[OAC 252:100-8-6(a)(3)(C)(iv)]

SECTION XV. RISK MANAGEMENT PLAN

The permittee, if subject to the provision of Section 112(r) of the Clean Air Act, shall develop and register with the appropriate agency a risk management plan by June 20, 1999, or the applicable effective date.

[OAC 252:100-8-6(a)(4)]

SECTION XVI. INSIGNIFICANT ACTIVITIES

Except as otherwise prohibited or limited by this permit, the permittee is hereby authorized to operate individual emissions units that are either on the list in Appendix I to OAC Title 252, Chapter 100, or whose actual calendar year emissions do not exceed any of the limits below. Any activity to which a State or Federal applicable requirement applies is not insignificant even if it meets the criteria below or is included on the insignificant activities list.

- (1) 5 tons per year of any one criteria pollutant.

- (2) 2 tons per year for any one hazardous air pollutant (HAP) or 5 tons per year for an aggregate of two or more HAP's, or 20 percent of any threshold less than 10 tons per year for single HAP that the EPA may establish by rule.

[OAC 252:100-8-2 and OAC 252:100, Appendix I]

SECTION XVII. TRIVIAL ACTIVITIES

Except as otherwise prohibited or limited by this permit, the permittee is hereby authorized to operate any individual or combination of air emissions units that are considered inconsequential and are on the list in Appendix J. Any activity to which a State or Federal applicable requirement applies is not trivial even if included on the trivial activities list.

[OAC 252:100-8-2 and OAC 252:100, Appendix J]

SECTION XVIII. OPERATIONAL FLEXIBILITY

A. A facility may implement any operating scenario allowed for in its Part 70 permit without the need for any permit revision or any notification to the DEQ (unless specified otherwise in the permit). When an operating scenario is changed, the permittee shall record in a log at the facility the scenario under which it is operating.

[OAC 252:100-8-6(a)(10) and (f)(1)]

B. The permittee may make changes within the facility that:

- (1) result in no net emissions increases,
- (2) are not modifications under any provision of Title I of the federal Clean Air Act, and
- (3) do not cause any hourly or annual permitted emission rate of any existing emissions unit to be exceeded;

provided that the facility provides the EPA and the DEQ with written notification as required below in advance of the proposed changes, which shall be a minimum of seven (7) days, or twenty four (24) hours for emergencies as defined in OAC 252:100-8-6 (e). The permittee, the DEQ, and the EPA shall attach each such notice to their copy of the permit. For each such change, the written notification required above shall include a brief description of the change within the permitted facility, the date on which the change will occur, any change in emissions, and any permit term or condition that is no longer applicable as a result of the change. The permit shield provided by this permit does not apply to any change made pursuant to this paragraph.

[OAC 252:100-8-6(f)(2)]

SECTION XIX. OTHER APPLICABLE & STATE-ONLY REQUIREMENTS

A. The following applicable requirements and state-only requirements apply to the facility unless elsewhere covered by a more restrictive requirement:

- (1) Open burning of refuse and other combustible material is prohibited except as authorized in the specific examples and under the conditions listed in the Open Burning Subchapter.

[OAC 252:100-13]

- (2) No particulate emissions from any fuel-burning equipment with a rated heat input of 10 MMBTUH or less shall exceed 0.6 lb/MMBTU. [OAC 252:100-19]
- (3) For all emissions units not subject to an opacity limit promulgated under 40 C.F.R., Part 60, NSPS, no discharge of greater than 20% opacity is allowed except for:
- (a) Short-term occurrences which consist of not more than one six-minute period in any consecutive 60 minutes, not to exceed three such periods in any consecutive 24 hours. In no case shall the average of any six-minute period exceed 60% opacity;
 - (b) Smoke resulting from fires covered by the exceptions outlined in OAC 252:100-13-7;
 - (c) An emission, where the presence of uncombined water is the only reason for failure to meet the requirements of OAC 252:100-25-3(a); or
 - (d) Smoke generated due to a malfunction in a facility, when the source of the fuel producing the smoke is not under the direct and immediate control of the facility and the immediate constriction of the fuel flow at the facility would produce a hazard to life and/or property.
- [OAC 252:100-25]
- (4) No visible fugitive dust emissions shall be discharged beyond the property line on which the emissions originate in such a manner as to damage or to interfere with the use of adjacent properties, or cause air quality standards to be exceeded, or interfere with the maintenance of air quality standards. [OAC 252:100-29]
- (5) No sulfur oxide emissions from new gas-fired fuel-burning equipment shall exceed 0.2 lb/MMBTU. No existing source shall exceed the listed ambient air standards for sulfur dioxide. [OAC 252:100-31]
- (6) Volatile Organic Compound (VOC) storage tanks built after December 28, 1974, and with a capacity of 400 gallons or more storing a liquid with a vapor pressure of 1.5 psia or greater under actual conditions shall be equipped with a permanent submerged fill pipe or with a vapor-recovery system. [OAC 252:100-37-15(b)]
- (7) All fuel-burning equipment shall at all times be properly operated and maintained in a manner that will minimize emissions of VOCs. [OAC 252:100-37-36]

SECTION XX. STRATOSPHERIC OZONE PROTECTION

A. The permittee shall comply with the following standards for production and consumption of ozone-depleting substances:

- (1) Persons producing, importing, or placing an order for production or importation of certain class I and class II substances, HCFC-22, or HCFC-141b shall be subject to the requirements of §82.4;
- (2) Producers, importers, exporters, purchasers, and persons who transform or destroy certain class I and class II substances, HCFC-22, or HCFC-141b are subject to the recordkeeping requirements at §82.13; and
- (3) Class I substances (listed at Appendix A to Subpart A) include certain CFCs, Halons, HBFCs, carbon tetrachloride, trichloroethane (methyl chloroform), and bromomethane

(Methyl Bromide). Class II substances (listed at Appendix B to Subpart A) include HCFCs.

[40 CFR 82, Subpart A]

B. If the permittee performs a service on motor (fleet) vehicles when this service involves an ozone-depleting substance refrigerant (or regulated substitute substance) in the motor vehicle air conditioner (MVAC), the permittee is subject to all applicable requirements. Note: The term “motor vehicle” as used in Subpart B does not include a vehicle in which final assembly of the vehicle has not been completed. The term “MVAC” as used in Subpart B does not include the air-tight sealed refrigeration system used as refrigerated cargo, or the system used on passenger buses using HCFC-22 refrigerant.

[40 CFR 82, Subpart B]

C. The permittee shall comply with the following standards for recycling and emissions reduction except as provided for MVACs in Subpart B:

- (1) Persons opening appliances for maintenance, service, repair, or disposal must comply with the required practices pursuant to § 82.156;
- (2) Equipment used during the maintenance, service, repair, or disposal of appliances must comply with the standards for recycling and recovery equipment pursuant to § 82.158;
- (3) Persons performing maintenance, service, repair, or disposal of appliances must be certified by an approved technician certification program pursuant to § 82.161;
- (4) Persons disposing of small appliances, MVACs, and MVAC-like appliances must comply with record-keeping requirements pursuant to § 82.166;
- (5) Persons owning commercial or industrial process refrigeration equipment must comply with leak repair requirements pursuant to § 82.158; and
- (6) Owners/operators of appliances normally containing 50 or more pounds of refrigerant must keep records of refrigerant purchased and added to such appliances pursuant to § 82.166.

[40 CFR 82, Subpart F]

SECTION XXI. TITLE V APPROVAL LANGUAGE

A. DEQ wishes to reduce the time and work associated with permit review and, wherever it is not inconsistent with Federal requirements, to provide for incorporation of requirements established through construction permitting into the Source’s Title V permit without causing redundant review. Requirements from construction permits may be incorporated into the Title V permit through the administrative amendment process set forth in OAC 252:100-8-7.2(a) only if the following procedures are followed:

- (1) The construction permit goes out for a 30-day public notice and comment using the procedures set forth in 40 C.F.R. § 70.7(h)(1). This public notice shall include notice to the public that this permit is subject to EPA review, EPA objection, and petition to EPA, as provided by 40 C.F.R. § 70.8; that the requirements of the construction permit will be incorporated into the Title V permit through the administrative amendment process; that the public will not receive another opportunity to provide comments when the requirements are incorporated into the Title V permit; and that EPA review, EPA

objection, and petitions to EPA will not be available to the public when requirements from the construction permit are incorporated into the Title V permit.

- (2) A copy of the construction permit application is sent to EPA, as provided by 40 CFR § 70.8(a)(1).
- (3) A copy of the draft construction permit is sent to any affected State, as provided by 40 C.F.R. § 70.8(b).
- (4) A copy of the proposed construction permit is sent to EPA for a 45-day review period as provided by 40 C.F.R. § 70.8(a) and (c).
- (5) The DEQ complies with 40 C.F.R. § 70.8(c) upon the written receipt within the 45-day comment period of any EPA objection to the construction permit. The DEQ shall not issue the permit until EPA's objections are resolved to the satisfaction of EPA.
- (6) The DEQ complies with 40 C.F.R. § 70.8(d).
- (7) A copy of the final construction permit is sent to EPA as provided by 40 CFR § 70.8(a).
- (8) The DEQ shall not issue the proposed construction permit until any affected State and EPA have had an opportunity to review the proposed permit, as provided by these permit conditions.
- (9) Any requirements of the construction permit may be reopened for cause after incorporation into the Title V permit by the administrative amendment process, by DEQ as provided in OAC 252:100-8-7.3(a), (b), and (c), and by EPA as provided in 40 C.F.R. § 70.7(f) and (g).
- (10) The DEQ shall not issue the administrative permit amendment if performance tests fail to demonstrate that the source is operating in substantial compliance with all permit requirements.

B. To the extent that these conditions are not followed, the Title V permit must go through the Title V review process.

SECTION XXII. CREDIBLE EVIDENCE

For the purpose of submitting compliance certifications or establishing whether or not a person has violated or is in violation of any provision of the Oklahoma implementation plan, nothing shall preclude the use, including the exclusive use, of any credible evidence or information, relevant to whether a source would have been in compliance with applicable requirements if the appropriate performance or compliance test or procedure had been performed.

[OAC 252:100-43-6]

Mr. Mark Blair, Vice president – Safety and Environmental Compliance
Pryor Plant Chemical Company
P.O. Box 429
Pryor, Oklahoma 74361

RE: Operating Permit No. **2008-100-C (PSD)**
Pryor Plant Chemical Company
Pryor Plant, Mid America Industrial Park
Pryor, Mayes County

Dear Mr. Carver:

Enclosed is the permit authorizing construction of the referenced facility. Please note that this permit is issued subject to standard and specific conditions, which are attached. Additionally, the specific conditions have a compliance schedule. These conditions must be carefully followed since they define the limits of the permit and will be confirmed by periodic inspections.

Also note that you are required to annually submit an emission inventory for this facility. An emission inventory must be completed on approved AQD forms and submitted (hardcopy or electronically) every year by April 1st. Any questions concerning the form or submittal process should be referred to the Emission Inventory Staff at 405-702-4100.

Thank you for your cooperation in this matter. If we may be of further service, please contact me at (918) 293-1617 or by mail at DEQ Regional Office at Tulsa, 3105 East Skelly Drive, Suite 200, Tulsa, Oklahoma, 74105.

Sincerely,

David Pollard, P.E., Professional Engineer III
AIR QUALITY DIVISION



PART 70 PERMIT

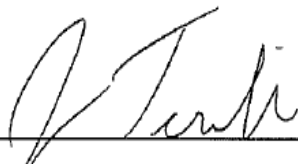
AIR QUALITY DIVISION
STATE OF OKLAHOMA
DEPARTMENT OF ENVIRONMENTAL QUALITY
707 N. ROBINSON, SUITE 4100
P.O. BOX 1677
OKLAHOMA CITY, OKLAHOMA 73101-1677

Permit No. 2008-100-C (PSD)

having complied with the requirements of the law, is hereby granted permission to
construct the Pryor Plant Chemical Company plant located in the Pryor - Mid America
Industrial Park, Section 3, Township 20N, Range 19E, Mayes County, Oklahoma,

subject to standard conditions dated December 22, 2008, and specific conditions, both
attached.

In the absence of construction commencement, this permit shall expire 18 months from the
issuance date, except as authorized under Section VIII of the Standard Conditions.



Director, DEQ

2-23-09
Date